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Applicant : Niall R. Lynam

For : NEAR-INFRARED REFLECTING, ULTRAVIOLET PROTECTED, SAFETY-PROTECTED, ELECTROCHROMIC VEHICULAR GLAZING

Box Patent Application
Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

PRELIMINARY AMENDMENT

Prior to examination of the above application, please amend the application as follows:

In the Title:

Please amend the title to read as follows:

--REDUCED ULTRAVIOLET RADIATION TRANSMITTING, VARIABLE TRANSMISSION, GLAZING ASSEMBLY--.

In the Specification:

Page 1, lines 4-9:

Please delete "This application is a continuation-in-part of prior pending application Serial No. 07/464,888 filed January 16, 1990, now issued as U.S. Patent No. ___, which is a continuation-in-part of prior pending application Serial No. 07/155,256, filed February 12, 1988, now abandoned."

Page 1, between lines 3 and 4, insert:

--This application is a continuation of prior pending application Serial No. 09/665,614, filed September 18, 2000, which is a continuation of Serial No. 09/418,525, filed

October 14, 1999, now issued as United States Patent No. 6,122,093, which is a continuation of prior pending application 09/233,164, filed January 18, 1999, now issued as United States Patent No. 5,986,797, which is a continuation of prior pending application Serial No. 08/939,854, filed September 29, 1997, now issued as United States Patent No. 5,864,419, which is a continuation of Serial No. 08/617,333, filed March 18, 1996, now issued as United States Patent No. 5,680,245, which is a continuation of prior pending application Serial No, 08/293,736, filed August 19, 1994, now United States Patent No. 5,523,877, which is a continuation of prior pending application Serial No. 08/082,882, filed June 25, 1993, now issued as United States Patent No. 5,355,245, which is a continuation of prior pending application Serial No. 07/732,572, filed July 18, 1991, now issued as United States Patent No. 5,239,406, which is a continuation-in-part of prior pending application Serial No. 07/464,888, filed January 16, 1990, now issued as United States Patent No. 5,115,346, which is a continuation-in-part of prior pending application Serial No. 07/155,256, filed February 12, 1988, now abandoned, the disclosures of all of which are hereby incorporated by reference herein.--

Page 22, lines 25-28:

--Fig. 42 is a sectional view of a third embodiment of the scatter protected, anti-lacerative, ultraviolet radiation protected, laminate, electrochromic, near-infrared attenuated glazing assembly of the present invention;

Page 22, after line 28:

10600-02760

Please insert --Fig. 42A is a sectional view of a fourth embodiment of the scatter protected, anti-lacerative, ultraviolet radiation protected, laminate, electrochromic, near infrared attenuated glazing assembly of the present invention; and--.

Page 67, lines 16-31:

A second embodiment 202 of the window glazing assembly invention is shown in Figure 40 where element 212 is the laminated composite formed from glass panels 251, 252. The specialized near-infrared reflector layer 250 is sandwiched between elements 251 and 252 on the inwardly facing surface of element 251. Thus, relative to the vehicle outside, layer 250 is below the electrochromic medium 220. Such a construction is less desirable than that shown in Figure 37 because layer 250 is not in a position to protect electrochromic medium 220 from the damaging effects of solar near-infrared and ultraviolet radiation.

Figure 36 shows the solar energy spectrum Air Mass 2 that constitutes the solar load incident on an automobile. The solar energy for Air Mass 2 is the insolation through two standard atmospheres using data originally proposed by P. Moon, Journal Franklin Inst., 230, 583 (1940). Most of the solar intensity for Air Mass 2 is between 300 and 2100 nm. On the average, ultraviolet (UV) constitutes 3% of solar radiation (up to 400 nm), while visible light or radiation is 48% (between 400 and 700 nm) and near-infrared (NIR) is 49% (between 700 and 2100). If a perfect filter--

Page 68, lines 4-27:

--As a specific illustration of the benefit achievable through use of a specialized near infrared reflector in combination with an electrochromic medium, UV,

luminous and solar transmission studies were performed on both an electrochromic cell alone and on the combination of commercially available heat mirror constructions with the same electrochromic cell. The cell was formed by sandwiching an electrochemichromic solution comprising:

0.035 M	ethylviologen perchlorate
0.035 M	5.10-dihydro-5, 10-dimethylphenazine
5% wt/vol	UVINUL™ 400 (2, 4-dihydroxy-benzophenone)

dissolved in a solvent comprising 75% 3-hydroxypropionitrile and 25% glutaronitrile. The cell gap was 135 microns. The ITO transparent conductors sandwiching the electrochemichromic medium were of half-wave (about 1500 angstroms) thickness and of sheet resistance 15 ohms/square or thereabouts coated onto 0.043" thick lime glass elements. Measurements were taken over four spectral ranges, namely, ultraviolet (UV), visible, near-infrared (NIR), and solar (Air Mass 2), of the attenuating characteristics of this electrochromic cell construction, both when the cell was bleached and when it was colored under 1 volt applied potential. The results are summarized in Table A.

Page 73, lines 1-5:

--indium oxide thin film layers, all in turn deposited onto a thin MYLAR™ flexible polymer film. Table C summarizes the results obtained when the electrochemichromic window cell of Table A was combined with a HM-55 heat mirror film by application to the outer glass surface.--

Page 75, line 1-18:

--EZ-KOOL™ glass which is a green tinted glass of increased cerium oxide and iron oxide content, available from Libbey Owens Ford of Toledo, Ohio, or with equivalent specialized UV-absorbing glasses as described above in connection with the electrochromic mirrors. Such specialized UV-absorbing glasses have a higher iron oxide content of within the range of about 0.2% to 0.9% by weight and/or a higher cerium oxide content of 0.2% to 0.9% by weight. Even higher iron oxide and/or cerium oxide contents, such as 1% to 2% or more, can be contemplated, for applications such as sunroofs, etc., where the dark tinting that accompanies such high levels of iron oxide and/or cerium oxide may not be product objectionable. For specialized UV absorbing glasses that have a high iron oxide content, it is desirable to maximize UV absorption by maximizing the ferric (Fe III) ion content of the glass. Alternately, a specialized UV absorbing glass of titanium dioxide content greater than 0.2 weight percent or thereabouts can be used.--

Page 78, lines 1-30:

--Element 216 consists of panels 251, 252. Panel 252 is a blue-tinted, UV-absorbing specialized glass (3 mm thickness) available from Ford Glass Company, Detroit, Michigan, under the trademark SUNGLAS™ BLUE. Layers 257a and 257b are blue-tinted plasticized polyvinylbutyral sheeting, each of sheet thickness 0.030", available from E.I. duPont de Nemours and Company of Wilmington, Delaware, under the trade name BUTACITE™ Cobalt Blue B140 0547800. Layer 250 is a specialized near-infrared reflector available from Southwall Corporation of Palo Alto, California, under the trade name HM-55 film. Element 212 and panel 251 were coated on their respective surfaces 213 and 217 with a transparent

conducting layer of full-wave indium tin oxide (ITO) of thickness approximately 3000 angstroms and of 7 ohms/square or thereabouts sheet resistance. The interpane gap 218 between elements 212 and 216 was about 135 microns in thickness. The electrochromic medium 220 was an electrochemichromic solution comprising:

0.035 M	ethylviologen perchlorate
0.035 M	5, 10-dihydro-5, 10-dimethylphenazine
5% wt/vol	UVINUL™ 400
	(2, 4-dihydroxy-benzophenone)

dissolved in a solvent comprising 75% by volume 3-hydroxypropionitrile and 25% glutaronitrile. Coloration was achieved by applying 1 volt potential across the electrochromic medium 220. Antilacerative layer 214 is a two-layer composite comprising an inner tear-resistant sheet 214a of plasticized polyvinylbutyral and an outer abrasion resistant layer 214b of polyester, and is marketed under the trademark BE 1028 by E.I. duPont, Wilmington, Delaware.--

Page 79, lines 1-20:

--Layer 214 can also include silicone moieties chemically incorporated in the anti-lacerative composite to prevent condensation and/or beading up of condensed water on the coated front surface 211 of element 212, in high humidity conditions thereby providing an anti-fogging, anti-misting result. A material found useful as anti-lacerative, anti-fogging layer is silicone impregnated polyurethane layer 214' of sunroof/glazing embodiment 206' shown in Fig. 42A. Layer 214' is supplied under the trade name CLARIFLEX™ by Saint-Gobain Vitrage of Paris, France. UV reducing additives such as those described in

connection with Fig. 2 may also be incorporated in the anti-lacerative, anti-fogging layer to increase the lifetime of the assembly. Alternately, element 212 may be fashioned from conventional soda lime glass, UV reducing specialized glasses, or polymer plastics. It is also possible to utilize thin film coatings or UV reducing paints or lacquers on at least one surface of front element 212 when the anti-lacerative, anti-fogging layer is incorporated. Likewise, it is possible to apply a near-infrared reflector incorporating a thin elemental metal film to front surface 211 of element 212.--

Page 82, lines 1-31:

--chemicals used in electrochromic medium 220. Likewise, and particularly for applications such as a sunroof, sun visor, or shade band where sun glare reduction, good shading efficiency, and good thermal insulation performance is desirable, at least one of elements 212, 216, 251 and 252 can be formed from architectural glass such as SOLARBRONZE™, a bronze tinted glass; SOLARGRAY™, a gray tinted glass; GRAYLITE™, a dark gray tinted glass; and SOLEX™, a green tinted glass; all available from Pittsburgh Plate Glass Industries of Pittsburgh, Pennsylvania; SUNGLAS™ Gray, a gray tinted glass; and SUNGLAS™ bronze, a bronze tinted glass; available from Ford Glass Company, Detroit, Michigan; and with E-Z-EYE™, a green tinted glass; available from Libby Owens Ford of Toledo, Ohio. Further, elements 212, 216, 251 and 252 can be coated with low-emittance monolithic architectural coatings such as SUNGATE™ 100, a low emittance, high transmittance coating available from Pittsburgh Plate Glass Industries of Pittsburgh, Pennsylvania; and SUNGLAS™ HR, a low emittance, high transmittance coating available from Ford Glass Company, Detroit, Michigan. Also, ECLIPSE™, pyrolytic Low-E coating available from

Libby Owens Ford of Toledo, Ohio can be used. Further, elements 212, 216, 251 and 252 can be coated with vacuum deposited architectural coatings such as SOLARBAN™ available from Pittsburgh Plate Glass Industries of Pittsburgh, Pennsylvania, or can be coated with KOOLOF™, a solar control coating available from Libby Owens Ford of Toledo, Ohio.

Further, perimetric or perimeter coatings and darkened/color matched seals, as described in United States Patent No. 5,066,112, entitled--

Page 83, lines 1-24:

--PERIMETER COATED, ELECTRO-OPTIC MIRROR, invented by Niall R. Lynam, the disclosure of which is hereby incorporated by reference herein, can be applied to window glazing constructions such as shown in Figs. 37, 40 and 43. For example, perimetric or perimeter coatings, 310 and 311 of Fig. 43, of a conductive black frit or paint, can be applied around the perimeter of surface layers 312a and 217a so as to hide from view the seal 229 and the connection of electrical leads 22, 24 to layers 213a, 217a. A suitable material is ENGLEHARD SC 6002 (# 6082), a platinum/palladium conductive ink available from Englehard Corporation of Iselin, New Jersey. Also, seal 229 can be color matched to any bezels, gaskets, encapsulants, or vehicular body moldings used to fix the electrochromic window assembly into a vehicle. For example, carbon black, in a nonconducting form, could be added to seal 229 in order to render it color matched to any black or dark rubber or plastic encapsulation means used to secure the electrochromic assembly into the vehicle. Alternately, perimetric or perimeter coatings 410, 420, as shown by the dashed lines on Fig. 43, and formed from, for example, a frit material such as DRAKENFELD™ black enamel 24-

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1729 available from Drakenfeld Colors of Wilmington, Pennsylvania, can be used to obscure from view the seal/electrical means used in the assembly.--

Page 100, please delete the present Abstract, at lines 4-27 and insert the following:

--A glazing/window assembly with reduced ultraviolet (UV) radiation transmission may include at least a pair of glass panels or other elements confining an electrochromic medium therebetween. Ultraviolet radiation reducing material is incorporated for reducing ultraviolet radiation transmission through the assembly. The ultraviolet radiation reducing material comprises at least one of an ultraviolet absorber, an ultraviolet absorbing polymer, and an ultraviolet absorbing glass. At least one of a laminated glass panel, tempered glass panel and a polymeric layer is provided to prevent injury upon impact to the assembly. A color tint may be included in the assembly to provide a tint to transmitted light.--

In the Drawings:

Please amend the drawings by adding proposed new Fig. 42A, which is substantially identical to Fig. 42 except for the inclusion of a single silicone impregnated polyurethane layer 214', which layer 214' is already referred to in the original specification on page 79. This drawing change, as well as additional changes which overcome the informalities noted in the originally filed application Serial No. 07/732,572, filed July 18, 1991, are shown on the attached 24 sheets of proposed formal ink drawings for which approval of the Examiner is requested. It is noted that all of these drawing changes, including the proposed new Fig. 42A, were approved by the Examiner in application Serial No.

07/732,572, filed July 18, 1991, now U.S. Patent No. 5,239,406, and were entered in that application. Approval and entry of these corrected formal drawings is respectfully requested.

In the Claims:

Please cancel claims 1-75.

Please add new claims 76-357 as follows:

76. A reduced ultraviolet transmitting, safety-protected, variable transmission, vehicular glazing assembly suitable for use in a vehicle having an interior and an exterior, said assembly comprising:

at least first and second spaced optically transparent panels, said first panel located closest to the exterior of the vehicle when said assembly is mounted in the vehicle and said second panel located closest to the interior of the vehicle when said assembly is mounted in the vehicle;

said first and said second panels each having a front surface and an opposing rear surface, said rear surface of said first panel facing and spaced from said front surface of said second panel defining a space between said first and second panels;

a variable transmission medium disposed in said space whose visible light transmittance is variable upon the application of an electric field thereto;

ultraviolet radiation reducing means incorporated in said assembly for reducing ultraviolet radiation transmission through said assembly wherein said ultraviolet radiation reducing means comprises at least one of an ultraviolet absorber, an ultraviolet absorbing polymer and an ultraviolet absorbing glass; and

safety means incorporated in said assembly for preventing injury upon impact to said assembly, said safety means comprising at least one of a laminated glass panel, a tempered glass panel and a polymeric layer.

77. The vehicular glazing assembly of claim 76 wherein said glazing assembly comprises a vehicle window.

78. The vehicular glazing assembly of claim 76 wherein said glazing assembly comprises a vehicle sunroof.

79. The vehicular glazing assembly of claim 76 wherein said glazing assembly comprises a vehicle sun visor.

80. The vehicular glazing assembly of claim 76 wherein said glazing assembly comprises a vehicle shade band.

81. The vehicular glazing assembly of claim 76 wherein at least one of said first and second panels comprises a tempered, glass panel.

82. The vehicular glazing assembly of claim 81 wherein each of said first and second panels comprises a tempered, glass panel.

83. The vehicular glazing assembly of claim 76 wherein at least said first panel comprises a tempered, glass panel.

84. The vehicular glazing assembly of claim 76 wherein at least one of said first and second panels comprises a tinted glass panel.

85. The vehicular glazing assembly of claim 84 wherein said tinted glass panel has a tint selected from the group consisting of a blue tint, a green tint, a blue/green tint, a bronze tint and a gray tint.

86. The vehicular glazing assembly of claim 76 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a single-layer polymer film.

87. The vehicular glazing assembly of claim 86 wherein said single-layer polymer film comprises polyurethane.

88. The vehicular glazing assembly of claim 76 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a two-layer polymer film.

89. The vehicular glazing assembly of claim 88 wherein one layer of said two-layer polymer film comprises plasticized polyvinylbutyral.

90. The vehicular glazing assembly of claim 89 wherein the other layer of said two-layer polymer film comprises polyester and wherein said polyvinylbutyral layer is disposed between said polyester layer and said rear surface of said second panel.

91. The vehicular glazing assembly of claim 76 wherein said variable transmission medium is disposed between a first and a second transparent conductor.

92. The vehicular glazing assembly of claim 91 wherein at least one of said first and second transparent conductors comprises one of indium tin oxide, doped tin oxide and doped zinc oxide.

93. The vehicular glazing assembly of claim 91 wherein both of said first and second transparent conductors comprise one of indium tin oxide, doped tin oxide and doped zinc oxide.

94. The vehicular glazing assembly of claim 91 wherein both of said first and second transparent conductors comprise indium tin oxide.

95. The vehicular glazing assembly of claim 76 wherein at least one of said first and second panels comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

96. The vehicular glazing assembly of claim 76 wherein at least said first panel comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

97. The vehicular glazing assembly of claim 96 wherein at least said first panel comprises a tempered, glass panel.

98. The vehicular glazing assembly of claim 97 wherein at least said first panel comprises a glass panel bent to a compound curvature.

99. The vehicular glazing assembly of claim 76 wherein said assembly incorporates spectrally absorbing means for absorbing more light in those regions of the visible spectrum from about 560 nanometers to about 780 nanometers than is absorbed in those regions of the visible spectrum from about 400 nanometers to about 560 nanometers.

100. The vehicular glazing assembly of claim 76 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

101. The vehicular glazing assembly of claim 100 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

102. The vehicular glazing assembly of claim 100 wherein said additive comprises a benzophenone.

103. The vehicular glazing assembly of claim 100 wherein said additive comprises a benzotriazole.

104. The vehicular glazing assembly of claim 100 wherein said additive comprises a cyanoacrylate.

105. The vehicular glazing assembly of claim 100 wherein said variable transmission medium includes said additive.

106. The vehicular glazing assembly of claim 100 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer including said additive.

107. The vehicular glazing assembly of claim 76 wherein said assembly includes near-infrared radiation transmission reducing means.

108. The vehicular glazing assembly of claim 107 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break, said near-infrared radiation transmission reducing means being located on at least one of said first panel, said second panel and said polymeric layer.

109. The vehicular glazing assembly of claim 108 wherein said near-infrared radiation transmission reducing means comprises a near-infrared reflector deposited onto said polymeric layer.

110. The vehicular glazing assembly of claim 76 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising an anti-fogging polymer layer.

111. The vehicular glazing assembly of claim 76 wherein at least one of said panels comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

112. The vehicular glazing assembly of claim 76 wherein said variable transmission medium of said assembly has a highest transmission state and wherein said assembly has a color tint in the visible light that is transmitted when said variable transmission medium is in said highest transmission state.

113. The vehicular glazing assembly of claim 112 wherein said color tint is selected from the group including a blue tint, a green tint and a blue-green tint.

114. The vehicular glazing assembly of claim 76 wherein said tempered glass panel is tempered by one of thermal, contact and chemical tempering.

115. The vehicular glazing assembly of claim 76 wherein said assembly includes an infra-red reflector.

116. The vehicular glazing assembly of claim 115 wherein said infra-red reflector reflects at least about 30% of the solar energy for Air Mass 2 in the spectral region from 800 nanometers to 2500 nanometers.

117. The vehicular glazing assembly of claim 76 wherein at least one of said panels is tinted.

118. The vehicular glazing assembly of claim 117 wherein said at least one tinted panel has one of a blue tint, a green tint and a blue-green tint.

119. The vehicular glazing assembly of claim 76 wherein said first panel comprises a glass panel.

120. The vehicular glazing assembly of claim 119 wherein said glass panel comprises a laminated glass panel.

121. The vehicular glazing assembly of claim 120 wherein said laminated glass panel comprises a curved laminated glass panel.

122. The vehicular glazing assembly of claim 121 wherein said curved laminated glass panel comprises a color tinted curved laminated glass panel.

123. The vehicular glazing assembly of claim 122 wherein said color tinted curved laminated glass panel comprises a color tinted laminating polymeric interlayer.

124. The vehicular glazing assembly of claim 123 wherein said color tinted laminating polymeric interlayer includes at least one ultraviolet absorber.

125. The vehicular glazing assembly of claim 124 wherein said color tinted laminating polymeric interlayer comprises polyvinyl butyral.

126. The vehicular glazing assembly of claim 119 wherein said first panel comprises a tempered glass panel.

127. The vehicular glazing assembly of claim 126 wherein said tempered glass panel comprises a curved tempered glass panel.

128. The vehicular glazing assembly of claim 127 wherein said tempered glass panel comprises a color tinted tempered glass panel.

129. The vehicular glazing assembly of claim 128 wherein said color tinted tempered glass panel comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

130. The vehicular glazing assembly of claim 76 wherein said ultraviolet radiation reducing means are included in said variable transmission medium.

131. The vehicular glazing assembly of claim 130 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

132. The vehicular glazing assembly of claim 131 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

133. The vehicular glazing assembly of claim 131 wherein said additive comprises a benzophenone.

134. The vehicular glazing assembly of claim 131 wherein said additive comprises a benzotriazole.

135. The vehicular glazing assembly of claim 131 wherein said additive comprises a cyanoacrylate.

136. The vehicular glazing assembly of claim 131 wherein said additive comprises an oxalanilide.

137. The vehicular glazing assembly of claim 131 wherein said additive comprises an amine.

138. The vehicular glazing assembly of claim 131 wherein said additive comprises a salicylate.

139. The vehicular glazing assembly of claim 131 wherein said additive comprises a nickel compound.

140. The vehicular glazing assembly of claim 76 wherein said variable transmission medium comprises an electrochromic medium.

141. The vehicular glazing assembly of claim 76 wherein said variable transmission medium comprises a liquid crystal medium.

142. A reduced ultraviolet transmitting, safety-protected, variable transmission, vehicular glazing assembly suitable for use in a vehicle having an interior and an exterior, said assembly comprising:

at least first and second spaced optically transparent panels, said first panel located closest to the exterior of the vehicle when said assembly is mounted in the vehicle and said second panel located closest to the interior of the vehicle when said assembly is mounted in the vehicle;

said first and said second panels each having a front surface and an opposing rear surface, said rear surface of said first panel facing and spaced from said front surface of said second panel defining a space between said first and second panels;

a variable transmission medium disposed in said space whose visible light transmittance is variable upon the application of an electric field thereto;

ultraviolet radiation reducing means incorporated in said assembly for reducing ultraviolet radiation transmission through said assembly wherein said ultraviolet

radiation reducing means comprises at least one of an ultraviolet absorber, an ultraviolet absorbing polymer and an ultraviolet absorbing glass;

safety means incorporated in said assembly for preventing injury upon impact to said assembly, said safety means comprising at least one of a laminated glass panel, a tempered glass panel and a polymeric layer; and

tinting means incorporated in said assembly for providing a color tint to light transmitted through said assembly.

143. The vehicular glazing assembly of claim 142 wherein said glazing assembly comprises a vehicle window.

144. The vehicular glazing assembly of claim 142 wherein said glazing assembly comprises a vehicle sunroof.

145. The vehicular glazing assembly of claim 142 wherein said glazing assembly comprises a vehicle sun visor.

146. The vehicular glazing assembly of claim 142 wherein said glazing assembly comprises a vehicle shade band.

147. The vehicular glazing assembly of claim 142 wherein at least one of said first and second panels comprises a tempered glass panel.

148. The vehicular glazing assembly of claim 147 wherein each of said first and second panels comprises a tempered glass panel.

149. The vehicular glazing assembly of claim 142 wherein at least said first panel comprises a tempered glass panel.

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150. The vehicular glazing assembly of claim 142 wherein at least one of said first and second panels comprises a tinted glass panel.

151. The vehicular glazing assembly of claim 150 wherein said tinted glass panel has a tint selected from the group consisting of a blue tint, a green tint, a blue/green tint, a bronze tint and a gray tint.

152. The vehicular glazing assembly of claim 142 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a single-layer polymer film.

153. The vehicular glazing assembly of claim 152 wherein said single-layer polymer film comprises polyurethane.

154. The vehicular glazing assembly of claim 142 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a two-layer polymer film.

155. The vehicular glazing assembly of claim 154 wherein one layer of said two-layer polymer film comprises plasticized polyvinylbutyral.

156. The vehicular glazing assembly of claim 155 wherein the other layer of said two-layer polymer film comprises polyester and wherein said polyvinylbutyral layer is disposed between said polyester layer and said rear surface of said second panel.

157. The vehicular glazing assembly of claim 142 wherein said variable transmission medium is disposed between a first and a second transparent conductor.

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158. The vehicular glazing assembly of claim 157 wherein at least one of said first and second transparent conductors comprises one of indium tin oxide, doped tin oxide and doped zinc oxide.

159. The vehicular glazing assembly of claim 157 wherein both of said first and second transparent conductors comprise one of indium tin oxide, doped tin oxide and doped zinc oxide.

160. The vehicular glazing assembly of claim 157 wherein both of said first and second transparent conductors comprise indium tin oxide.

161. The vehicular glazing assembly of claim 142 wherein at least one of said first and second panels comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

162. The vehicular glazing assembly of claim 142 wherein at least said first panel comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

163. The vehicular glazing assembly of claim 162 wherein at least said first panel comprises a tempered glass panel.

164. The vehicular glazing assembly of claim 163 wherein at least said first panel comprises a glass panel bent to a compound curvature.

165. The vehicular glazing assembly of claim 142 wherein said assembly incorporates spectrally absorbing means for absorbing more light in those regions of the visible spectrum from about 560 nanometers to about 780 nanometers than is absorbed in those regions of the visible spectrum from about 400 nanometers to about 560 nanometers.

166. The vehicular glazing assembly of claim 142 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

167. The vehicular glazing assembly of claim 166 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

168. The vehicular glazing assembly of claim 166 wherein said additive comprises a benzophenone.

169. The vehicular glazing assembly of claim 166 wherein said additive comprises a benzotriazole.

170. The vehicular glazing assembly of claim 166 wherein said additive comprises a cyanoacrylate.

171. The vehicular glazing assembly of claim 166 wherein said variable transmission medium includes said additive.

172. The vehicular glazing assembly of claim 166 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer including said additive.

173. The vehicular glazing assembly of claim 142 wherein said assembly includes near-infrared radiation transmission reducing means.

174. The vehicular glazing assembly of claim 173 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break, said near-infrared radiation transmission reducing means being located on at least one of said first panel, said second panel and said polymeric layer.

175. The vehicular glazing assembly of claim 174 wherein said near-infrared radiation transmission reducing means comprises a near-infrared reflector deposited onto said polymeric layer.

176. The vehicular glazing assembly of claim 142 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising an anti-fogging polymeric layer.

177. The vehicular glazing assembly of claim 142 wherein at least one of said panels comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

178. The vehicular glazing assembly of claim 142 wherein said variable transmission medium of said assembly has a highest transmission state and wherein said assembly has a color tint in the visible light that is transmitted when said variable transmission medium is in said highest transmission state.

179. The vehicular glazing assembly of claim 178 wherein said color tint is selected from the group including a blue tint, a green tint and a blue-green tint.

180. The vehicular glazing assembly of claim 142 wherein said tempered glass panel is tempered by one of thermal, contact and chemical tempering.

181. The vehicular glazing assembly of claim 142 wherein said assembly includes an infra-red reflector.

182. The vehicular glazing assembly of claim 181 wherein said infra-red reflector reflects at least about 30% of the solar energy for Air Mass 2 in the spectral region from 800 nanometers to 2500 nanometers.

183. The vehicular glazing assembly of claim 142 wherein at least one of said panels is tinted.

184. The vehicular glazing assembly of claim 183 wherein said at least one tinted panel has one of a blue tint, a green tint and a blue-green tint.

185. The vehicular glazing assembly of claim 142 wherein said first panel comprises a glass panel.

186. The vehicular glazing assembly of claim 185 wherein said glass panel comprises a laminated glass panel.

187. The vehicular glazing assembly of claim 186 wherein said laminated glass panel comprises a curved laminated glass panel.

188. The vehicular glazing assembly of claim 187 wherein said curved laminated glass panel comprises a color tinted curved laminated glass panel.

189. The vehicular glazing assembly of claim 188 wherein said color tinted curved laminated glass panel comprises a color tinted laminating polymeric interlayer.

190. The vehicular glazing assembly of claim 189 wherein said color tinted laminating polymeric interlayer includes at least one ultraviolet absorber.

191. The vehicular glazing assembly of claim 190 wherein said color tinted laminating polymeric interlayer comprises polyvinyl butyral.

192. The vehicular glazing assembly of claim 185 wherein said first panel comprises a tempered glass panel.

193. The vehicular glazing assembly of claim 192 wherein said tempered glass panel comprises a curved tempered glass panel.

194. The vehicular glazing assembly of claim 193 wherein said tempered glass panel comprises a color tinted tempered glass panel.

195. The vehicular glazing assembly of claim 194 wherein said color tinted tempered glass panel comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

196. The vehicular glazing assembly of claim 142 wherein said ultraviolet radiation reducing means are included in said variable transmission medium.

197. The vehicular glazing assembly of claim 196 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

198. The vehicular glazing assembly of claim 197 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

199. The vehicular glazing assembly of claim 197 wherein said additive comprises a benzophenone.

200. The vehicular glazing assembly of claim 197 wherein said additive comprises a benzotriazole.

201. The vehicular glazing assembly of claim 197 wherein said additive comprises a cyanoacrylate.

202. The vehicular glazing assembly of claim 197 wherein said additive comprises an oxalanilide.

203. The vehicular glazing assembly of claim 197 wherein said additive comprises an amine.

204. The vehicular glazing assembly of claim 197 wherein said additive comprises a salicylate.

205. The vehicular glazing assembly of claim 197 wherein said additive comprises a nickel compound.

206. The vehicular glazing assembly of claim 142 wherein said variable transmission medium comprises an electrochromic medium.

207. The vehicular glazing assembly of claim 142 wherein said variable transmission medium comprises a liquid crystal medium.

208. The vehicular glazing assembly of claim 142 wherein said tinting means comprises at least one of a color tinted panel, a color tinted polymer and a dye.

209. The vehicular glazing assembly of claim 142 wherein said tinting means is included in said variable transmission medium.

210. The vehicular glazing assembly of claim 209 wherein said tinting means comprises an organic dye that is not electro-optically active.

211. The vehicular glazing assembly of claim 142 wherein said tinting means is included in at least one of said first and second panels.

212. The vehicular glazing assembly of claim 142 wherein said safety means comprises a laminated glass panel; said tinting means being included in said laminated glass panel.

213. The vehicular glazing assembly of claim 142 wherein said safety means comprises a tempered glass panel; said tinting means being included in said tempered glass panel.

214. The vehicular glazing assembly of claim 142 wherein said safety means comprises a polymeric layer; said tinting means being included in said polymeric layer.

215. A reduced ultraviolet transmitting, safety-protected, variable transmission, vehicular glazing assembly suitable for use in a vehicle having an interior and an exterior, said assembly comprising:

at least first and second spaced optically transparent panels, said first panel located closest to the exterior of the vehicle when said assembly is mounted in the vehicle and said second panel located closest to the interior of the vehicle when said assembly is mounted in the vehicle;

said first and said second panels each having a front surface and an opposing rear surface, said rear surface of said first panel facing and spaced from said front surface of said second panel defining a space between said first and second panels;

a variable transmission medium disposed in said space whose visible light transmittance is variable upon the application of an electric field thereto;

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ultraviolet radiation reducing means incorporated in said assembly for reducing ultraviolet radiation transmission through said assembly wherein said ultraviolet reducing means comprises at least one of an ultraviolet absorber, an ultraviolet absorbing polymer and an ultraviolet absorbing glass;

safety means incorporated in said assembly for preventing injury upon impact to said assembly, said safety means comprising at least one of a laminated glass panel, a tempered glass panel and a polymeric layer; and

wherein said assembly includes at least one curved glass panel.

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216. The vehicular glazing assembly of claim 215 wherein said glazing assembly comprises a vehicle window.

217. The vehicular glazing assembly of claim 215 wherein said glazing assembly comprises a vehicle sunroof.

218. The vehicular glazing assembly of claim 215 wherein said glazing assembly comprises a vehicle sun visor.

219. The vehicular glazing assembly of claim 215 wherein said glazing assembly comprises a vehicle shade band.

220. The vehicular glazing assembly of claim 215 wherein at least one of said first and second panels comprises a tempered glass panel.

221. The vehicular glazing assembly of claim 215 wherein each of said first and second panels comprises a tempered glass panel.

222. The vehicular glazing assembly of claim 215 wherein at least one said first and second panels comprises a curved tempered glass panel.

223. The vehicular glazing assembly of claim 215 wherein each of said first and second panels comprises a curved tempered glass panel.

224. The vehicular glazing assembly of claim 215 wherein at least one of said first and second panels comprises a tinted glass panel.

225. The vehicular glazing assembly of claim 224 wherein said tinted glass panel has a tint selected from the group consisting of a blue tint, a green tint, a blue/green tint, a bronze tint and a gray tint.

226. The vehicular glazing assembly of claim 215 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a single-layer polymer film.

227. The vehicular glazing assembly of claim 226 wherein said single-layer polymer film comprises polyurethane.

228. The vehicular glazing assembly of claim 215 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a two-layer polymer film.

229. The vehicular glazing assembly of claim 228 wherein one layer of said two-layer polymer film comprises plasticized polyvinylbutyral.

230. The vehicular glazing assembly of claim 229 wherein the other layer of said two-layer polymer film comprises polyester and wherein said polyvinylbutyral layer is disposed between said polyester layer and said rear surface of said second panel.

231. The vehicular glazing assembly of claim 215 wherein said variable transmission medium is disposed between a first and a second transparent conductor.

232. The vehicular glazing assembly of claim 231 wherein at least one of said first and second transparent conductors comprises one of indium tin oxide, doped tin oxide and doped zinc oxide.

233. The vehicular glazing assembly of claim 231 wherein both of said first and second transparent conductors comprise one of indium tin oxide, doped tin oxide and doped zinc oxide.

234. The vehicular glazing assembly of claim 231 wherein both of said first and second transparent conductors comprise indium tin oxide.

235. The vehicular glazing assembly of claim 215 wherein at least one of said first and second panels comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

236. The vehicular glazing assembly of claim 215 wherein at least said first panel comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

237. The vehicular glazing assembly of claim 236 wherein at least said first panel comprises a tempered glass panel.

238. The vehicular glazing assembly of claim 237 wherein at least said first panel comprises a glass panel bent to a compound curvature.

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239. The vehicular glazing assembly of claim 215 wherein said assembly incorporates spectrally absorbing means for absorbing more light in those regions of the visible spectrum from about 560 nanometers to about 780 nanometers than is absorbed in those regions of the visible spectrum from about 400 nanometers to about 560 nanometers.

240. The vehicular glazing assembly of claim 215 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

241. The vehicular glazing assembly of claim 240 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

242. The vehicular glazing assembly of claim 240 wherein said additive comprises a benzophenone.

243. The vehicular glazing assembly of claim 240 wherein said additive comprises a benzotriazole.

244. The vehicular glazing assembly of claim 240 wherein said additive comprises a cyanoacrylate.

245. The vehicular glazing assembly of claim 240 wherein said variable transmission medium includes said additive.

246. The vehicular glazing assembly of claim 240 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer including said additive.

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247. The vehicular glazing assembly of claim 215 wherein said assembly includes near-infrared radiation transmission reducing means.

248. The vehicular glazing assembly of claim 247 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break, said near-infrared radiation transmission reducing means being located on at least one of said first panel, said second panel and said polymeric layer.

249. The vehicular glazing assembly of claim 248 wherein said near-infrared radiation transmission reducing means comprises a near-infrared reflector deposited onto said polymeric layer.

250. The vehicular glazing assembly of claim 215 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising an anti-fogging polymer layer.

251. The vehicular glazing assembly of claim 215 wherein at least one of said panels comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

252. The vehicular glazing assembly of claim 215 wherein said variable transmission medium of said assembly has a highest transmission state and wherein said assembly has a color tint in the visible light that is transmitted when said variable transmission medium is in said highest transmission state.

253. The vehicular glazing assembly of claim 252 wherein said color tint is selected from the group including a blue tint, a green tint and a blue-green tint.

254. The vehicular glazing assembly of claim 215 wherein said tempered glass panel is tempered by one of thermal, contact and chemical tempering.

255. The vehicular glazing assembly of claim 215 wherein said assembly includes an infra-red reflector.

256. The vehicular glazing assembly of claim 255 wherein said infra-red reflector reflects at least about 30% of the solar energy for Air Mass 2 in the spectral region from 800 nanometers to 2500 nanometers.

257. The vehicular glazing assembly of claim 215 wherein at least one of said panels is tinted.

258. The vehicular glazing assembly of claim 257 wherein said at least one tinted panel has one of a blue tint, a green tint and a blue-green tint.

259. The vehicular glazing assembly of claim 215 wherein said first panel comprises a glass panel.

260. The vehicular glazing assembly of claim 259 wherein said glass panel comprises a laminated glass panel.

261. The vehicular glazing assembly of claim 260 wherein said laminated glass panel comprises a curved laminated glass panel.

262. The vehicular glazing assembly of claim 261 wherein said curved laminated glass panel comprises a color tinted curved laminated glass panel.

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263. The vehicular glazing assembly of claim 262 wherein said color tinted curved laminated glass panel comprises a color tinted laminating polymeric interlayer.

264. The vehicular glazing assembly of claim 263 wherein said color tinted laminating polymeric interlayer includes at least one ultraviolet absorber.

265. The vehicular glazing assembly of claim 264 wherein said color tinted laminating polymeric interlayer comprises polyvinyl butyral.

266. The vehicular glazing assembly of claim 259 wherein said first panel comprises a tempered glass panel.

267. The vehicular glazing assembly of claim 266 wherein said tempered glass panel comprises a curved tempered glass panel.

268. The vehicular glazing assembly of claim 267 wherein said tempered glass panel comprises a color tinted tempered glass panel.

269. The vehicular glazing assembly of claim 268 wherein said color tinted tempered glass panel comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

270. The vehicular glazing assembly of claim 215 wherein said ultraviolet radiation reducing means are included in said variable transmission medium.

271. The vehicular glazing assembly of claim 270 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

272. The vehicular glazing assembly of claim 271 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids,

salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

273. The vehicular glazing assembly of claim 271 wherein said additive comprises a benzophenone.

274. The vehicular glazing assembly of claim 271 wherein said additive comprises a benzotriazole.

275. The vehicular glazing assembly of claim 271 wherein said additive comprises a cyanoacrylate.

276. The vehicular glazing assembly of claim 271 wherein said additive comprises an oxalanilide.

277. The vehicular glazing assembly of claim 271 wherein said additive comprises an amine.

278. The vehicular glazing assembly of claim 271 wherein said additive comprises a salicylate.

279. The vehicular glazing assembly of claim 271 wherein said additive comprises a nickel compound.

280. The vehicular glazing assembly of claim 215 wherein said variable transmission medium comprises an electrochromic medium.

281. The vehicular glazing assembly of claim 215 wherein said variable transmission medium comprises a liquid crystal medium.

282. The vehicular glazing assembly of claim 215 wherein said at least one curved glass panel comprises a curved tempered glass panel.

283. The vehicular glazing assembly of claim 215 wherein said at least one curved glass panel comprises a curved laminated glass panel.

284. The vehicular glazing assembly of claim 215 wherein said safety means comprises a polymeric layer, said at least one curved glass panel being contacted by said polymeric layer.

285. A reduced ultraviolet transmitting, safety-protected, variable transmission, window assembly having an exterior surface subject to direct exposure to a source of solar insolation and an interior surface spaced from said exterior surface, said interior surface being located further from said source of solar insolation than said exterior surface, said assembly comprising:

at least first and second spaced optically transparent panels, said first panel located closest to said exterior surface of said window assembly when said assembly is mounted for exposure to a source of solar insolation and said second panel located closest to said interior surface of said window assembly when said assembly is mounted for exposure to a source of solar insolation;

said first and said second panels each having a front surface and an opposing rear surface, said rear surface of said first panel facing and spaced from said front surface of said second panel defining a space between said first and second panels;

a variable transmission medium disposed in said space whose visible light transmittance is variable upon the application of an electric field thereto;

ultraviolet radiation reducing means incorporated in said assembly for reducing ultraviolet radiation transmission through said assembly wherein said ultraviolet reducing means comprises at least one of an ultraviolet absorber, an ultraviolet absorbing polymer and an ultraviolet absorbing glass;

safety means incorporated in said assembly for preventing injury upon impact to said assembly, said safety means comprising at least one of a laminated glass panel, a tempered glass panel and a polymeric layer; and

wherein said variable transmission medium of said assembly has a highest transmission state and wherein said assembly has a color tint in the visible light that is transmitted when said variable transmission medium is in said highest transmission state.

286. The window assembly of claim 285 wherein said glazing assembly comprises a vehicular window assembly.

287. The window assembly of claim 285 wherein said glazing assembly comprises a vehicular sunroof assembly.

288. The window assembly of claim 285 wherein said glazing assembly comprises a vehicular sun visor.

289. The window assembly of claim 285 wherein said glazing assembly comprises a vehicular shade band.

290. The window assembly of claim 285 wherein said second panel includes a mirror reflector coating on a surface thereof.

291. The window assembly of claim 290 wherein said glazing assembly is included in a mirror assembly for a vehicle.

292. The window assembly of claim 291 wherein said mirror assembly for a vehicle comprises an exterior mirror assembly.

293. The window assembly of claim 285 wherein at least one of said first and second panels comprises a tempered glass panel.

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294. The window assembly of claim 285 wherein each of said first and second panels comprises a tempered, glass panel.

295. The window assembly of claim 285 wherein at least one of said first and second panels comprises a curved tempered glass panel.

296. The window assembly of claim 285 wherein each of said first and second panels comprises a curved tempered glass panel.

297. The window assembly of claim 285 wherein at least one of said first and second panels comprises a tinted glass panel.

298. The window assembly of claim 297 wherein said tinted glass panel has a tint selected from the group consisting of a blue tint, a green tint, a blue/green tint, a bronze tint and a gray tint.

299. The window assembly of claim 285 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a single-layer polymer film.

300. The window assembly of claim 299 wherein said single-layer polymer film comprises polyurethane.

301. The window assembly of claim 285 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a two-layer polymer film.

302. The window assembly of claim 301 wherein one layer of said two-layer polymer film comprises plasticized polyvinylbutyral.

303. The window assembly of claim 302 wherein the other layer of said two-layer polymer film comprises polyester and wherein said polyvinylbutyral layer is disposed between said polyester layer and said rear surface of said second panel.

304. The window assembly of claim 285 wherein said variable transmission medium is disposed between a first and a second transparent conductor.

305. The window assembly of claim 304 wherein at least one of said first and second transparent conductors comprises one of indium tin oxide, doped tin oxide and doped zinc oxide.

306. The window assembly of claim 304 wherein both of said first and second transparent conductors comprise one of indium tin oxide, doped tin oxide and doped zinc oxide.

307. The window assembly of claim 304 wherein both of said first and second transparent conductors comprise indium tin oxide.

308. The window assembly of claim 285 wherein at least one of said first and second panels comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

309. The window assembly of claim 285 wherein at least said first panel comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

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310. The window assembly of claim 309 wherein at least said first panel comprises a tempered glass panel.

311. The window assembly of claim 310 wherein at least said first panel comprises a glass panel bent to a compound curvature.

312. The window assembly of claim 285 wherein said assembly incorporates spectrally absorbing means for absorbing more light in those regions of the visible spectrum from about 560 nanometers to about 780 nanometers than is absorbed in those regions of the visible spectrum from about 400 nanometers to about 560 nanometers.

313. The window assembly of claim 285 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

314. The window assembly of claim 313 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

315. The window assembly of claim 313 wherein said additive comprises a benzophenone.

316. The window assembly of claim 313 wherein said additive comprises a benzotriazole.

317. The window assembly of claim 313 wherein said additive comprises a cyanoacrylate.

318. The window assembly of claim 313 wherein said variable transmission medium includes said additive.

319. The window assembly of claim 313 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer including said additive.

320. The window assembly of claim 285 wherein said assembly includes near-infrared radiation transmission reducing means.

321. The window assembly of claim 320 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break, said near-infrared radiation transmission reducing means being located on at least one of said first panel, said second panel and said polymeric layer.

322. The window assembly of claim 321 wherein said near-infrared radiation transmission reducing means comprises a near-infrared reflector deposited onto said polymeric layer.

323. The window assembly of claim 285 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising an anti-fogging polymer layer.

324. The window assembly of claim 285 wherein at least one of said panels comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

325. The window assembly of claim 285 wherein said assembly includes at least one curved glass panel.

326. The window assembly of claim 285 wherein said assembly includes a color tint selected from the group including a blue tint, a green tint and a blue-green tint.

327. The window assembly of claim 285 wherein said tempered glass panel is tempered by one of thermal, contact and chemical tempering.

328. The window assembly of claim 285 wherein said assembly includes an infra-red reflector.

329. The window assembly of claim 328 wherein said infra-red reflector reflects at least about 30% of the solar energy for Air Mass 2 in the spectral region from 800 nanometers to 2500 nanometers.

330. The window assembly of claim 285 wherein at least one of said panels is tinted.

331. The window assembly of claim 330 wherein said at least one tinted panel has one of a blue tint, a green tint and a blue-green tint.

332. The window assembly of claim 285 wherein said first panel comprises a glass panel.

333. The window assembly of claim 332 wherein said glass panel comprises a laminated glass panel.

334. The window assembly of claim 333 wherein said laminated glass panel comprises a curved laminated glass panel.

335. The window assembly of claim 334 wherein said curved laminated glass panel comprises a color tinted curved laminated glass panel.

336. The window assembly of claim 335 wherein said color tinted curved laminated glass panel comprises a color tinted laminating polymeric interlayer.

337. The window assembly of claim 336 wherein said color tinted laminating polymeric interlayer includes at least one ultraviolet absorber.

338. The window assembly of claim 337 wherein said color tinted laminating polymeric interlayer comprises polyvinyl butyral.

339. The window assembly of claim 332 wherein said first panel comprises a tempered glass panel.

340. The window assembly of claim 339 wherein said tempered glass panel comprises a curved tempered glass panel.

341. The window assembly of claim 340 wherein said tempered glass panel comprises a color tinted tempered glass panel.

342. The window assembly of claim 341 wherein said color tinted tempered glass panel comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

343. The window assembly of claim 285 wherein said ultraviolet radiation reducing means are included in said variable transmission medium.

344. The window assembly of claim 343 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

345. The window assembly of claim 344 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic

acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

346. The window assembly of claim 344 wherein said additive comprises a benzophenone.

347. The window assembly of claim 344 wherein said additive comprises a benzotriazole.

348. The window assembly of claim 344 wherein said additive comprises a cyanoacrylate.

349. The window assembly of claim 344 wherein said additive comprises an oxalanilide.

350. The window assembly of claim 344 wherein said additive comprises an amine.

351. The window assembly of claim 344 wherein said additive comprises a salicylate.

352. The window assembly of claim 344 wherein said additive comprises a nickel compound.

353. The window assembly of claim 285 wherein said variable transmission medium comprises an electrochromic medium.

354. The window assembly of claim 285 wherein said variable transmission medium comprises a liquid crystal medium.

355. The window assembly of claim 285 wherein said window assembly comprises a curved tempered glass panel.

356. The window assembly of claim 285 wherein said window assembly comprises a curved laminated glass panel.

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357. The window assembly of claim 285 wherein said safety means comprises a polymeric layer, said window assembly being contacted by said polymeric layer.

REMARKS

Claims 76-357 are presented for examination and are fully supported in the specification and drawings as filed, and in the specification and drawings of prior related applications. Various amendments to the specification are made to correct minor informalities which were previously noted in prior related applications. The title and Abstract have been amended to reflect the subject matter of the new claims. Formal drawings including Fig. 42A are also presented to overcome informalities previously noted in related application Serial No. 07/732,572. No new matter has been added.

More particularly, the specification has been amended to be in the same form as allowed in application 07/732,572 including the addition of appropriate reference numerals, the capitalization of noted trademarks, the revision of Fig. 42 to show two layers 214a, 214b in the overall assembly, and reference to those two layers on page 78, the addition of new drawing Fig. 42A which is substantially identical to Fig. 42 except for the inclusion of a single polyurethane layer 214', the addition of reference numeral 214' on page 79, and a brief description of the new drawing Fig. 42A added on page 22. In addition, on page 82 and thereafter, references to "perimetal" have been replaced by "perimetric or perimeter". Also, on page 82, "U.S. Patent No. 5,066,122" has now been inserted, while reference to its application has been deleted. Further, an updated "Cross-Reference to Related Applications" has been inserted on page 1.

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It is respectfully submitted that the addition of Fig. 42A and the revised description noted above do not add any new subject matter to the application, but rather clarify the description on pages 78 and 79.

Further, on page 67, the definition of "Air Mass 2" has been inserted. Such definition was added in application 07/732,572 and is supported by the publications "Solar Coatings" from The Optical Industry and Systems Encyclopedia and Dictionary for Engineers and Specifiers, by The Optical Publishing Company, Inc., Pittsfield, Massachusetts, 25th Edition, Volume 2, 1979, and "Proposed Standard Solar-Radiation Curves for Engineering Use", by Parry Moon, J. Franklin Institute, 230, 583, 1940. Copies of these articles may be found in application, Serial No. 07/732,572.

Examination and a Notice of Allowance for claims 76-357 is respectfully requested.

Respectfully submitted,

NIALL R. LYNAM

By: Van Dyke, Gardner, Linn & Burkhart, LLP

October 9, 2001
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ABSTRACT

A glazing/window assembly with reduced ultraviolet (UV) radiation transmission may include at least a pair of glass panels or other elements confining an electrochromic medium therebetween. Ultraviolet radiation reducing material is incorporated for reducing ultraviolet radiation transmission through the assembly. The ultraviolet radiation reducing material comprises at least one of an ultraviolet absorber, an ultraviolet absorbing polymer, and an ultraviolet absorbing glass. At least one of a laminated glass panel, tempered glass panel and a polymeric layer is provided to prevent injury upon impact to the assembly. A color tint may be included in the assembly to provide a tint to transmitted light.

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PATENT
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Express Mail No. EL846000043US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Niall R. Lynam

For : NEAR-INFRARED REFLECTING, ULTRAVIOLET PROTECTED, SAFETY-PROTECTED, ELECTROCHROMIC VEHICULAR GLAZING

Box Patent Application
Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Prior to examination of the above application, please amend the application as follows:

In the Title:

Please amend the title to read as follows:

--REDUCED ULTRAVIOLET RADIATION TRANSMITTING, VARIABLE TRANSMISSION, GLAZING ASSEMBLY--.

In the Specification:

Page 1, lines 4-9:

Please delete "This application is a continuation-in-part of prior pending application Serial No. 07/464,888 filed January 16, 1990, now issued as U.S. Patent No. ___, which is a continuation-in-part of prior pending application Serial No. 07/155,256, filed February 12, 1988, now abandoned."

Page 1, between lines 3 and 4, insert:

--This application is a continuation of prior pending application Serial No. 09/665,614, filed September 18, 2000, which is a continuation of Serial No. 09/418,525, filed October 14, 1999, now issued as United States Patent No. 6,122,093, which is a continuation

of prior pending application 09/233,164, filed January 18, 1999, now issued as United States Patent No. 5,986,797, which is a continuation of prior pending application Serial No. 08/939,854, filed September 29, 1997, now issued as United States Patent No. 5,864,419, which is a continuation of Serial No. 08/617,333, filed March 18, 1996, now issued as United States Patent No. 5,680,245, which is a continuation of prior pending application Serial No, 08/293,736, filed August 19, 1994, now United States Patent No. 5,523,877, which is a continuation of prior pending application Serial No. 08/082,882, filed June 25, 1993, now issued as United States Patent No. 5,355,245, which is a continuation of prior pending application Serial No. 07/732,572, filed July 18, 1991, now issued as United States Patent No. 5,239,406, which is a continuation-in-part of prior pending application Serial No. 07/464,888, filed January 16, 1990, now issued as United States Patent No. 5,115,346, which is a continuation-in-part of prior pending application Serial No. 07/155,256, filed February 12, 1988, now abandoned, the disclosures of all of which are hereby incorporated by reference herein.--

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Page 22, lines 25-28:

--Fig. 42 is a sectional view of a third embodiment of the scatter protected, anti-lacerative, ultraviolet radiation protected, laminate, electrochromic, near-infrared attenuated glazing assembly of the present invention; [and]

Page 22, after line 28:

Please insert --Fig. 42A is a sectional view of a fourth embodiment of the scatter protected, anti-lacerative, ultraviolet radiation protected, laminate, electrochromic, near infrared attenuated glazing assembly of the present invention; and--.

Page 67, lines 16-31:

A second embodiment 202 of the window glazing assembly invention is shown in Figure 40 where element 212 is the laminated composite formed from glass panels 251, [212] 252. The specialized near-infrared reflector layer 250 is sandwiched between elements 251 and 252 on the inwardly facing surface of element 251. Thus, relative to the vehicle outside, layer 250 is below the electrochromic medium 220. Such a construction is less desirable than that shown in Figure 37 because layer 250 is not in a position to protect electrochromic medium 220 from the damaging effects of solar near-infrared and ultraviolet radiation.

Figure 36 shows the solar energy spectrum Air Mass 2 that constitutes the solar load incident on an automobile. The solar energy for Air Mass 2 is the insolation through two standard atmospheres using data originally proposed by P. Moon, Journal Franklin Inst., 230, 583 (1940). Most of the solar intensity for Air Mass 2 is between 300 and 2100 nm. On the average, ultraviolet (UV) constitutes 3% of solar radiation (up to 400 nm), while visible light or radiation is 48% (between 400 and 700 nm) and near-infrared (NIR) is 49% (between 700 and 2100). If a perfect filter--

Page 68, lines 4-27:

--As a specific illustration of the benefit achievable through use of a specialized near infrared reflector in combination with an electrochromic medium, UV, luminous and solar transmission studies were performed on both an electrochromic cell alone and on the combination of commercially available heat mirror constructions with the same electrochromic cell. The cell was formed by sandwiching an electrochemichromic solution comprising:

0.035 M	ethylviologen perchlorate
0.035 M	5.10-dihydro-5, 10-dimethylphenazine
5% wt/vol	[Uvinul™] UVINUL™ 400 (2, 4-dihydroxy-benzophenone)

dissolved in a solvent comprising 75% 3-hydroxypropionitrile and 25% glutaronitrile. The cell gap was 135 microns. The ITO transparent conductors sandwiching the electrochemichromic medium were of half-wave (about 1500 angstroms) thickness and of sheet resistance 15 ohms/square or thereabouts coated onto 0.043" thick lime glass elements. Measurements were taken over four spectral ranges, namely, ultraviolet (UV), visible, near-infrared (NIR), and solar (Air Mass 2), of the attenuating characteristics of this electrochromic cell construction, both when the cell was bleached and when it was colored under 1 volt applied potential. The results are summarized in Table A.

Page 73, lines 1-5:

--indium oxide thin film layers, all in turn deposited onto a thin [Mylar™] MYLAR™ flexible polymer film. Table C summarizes the results obtained when the electrochemichromic window cell of Table A was combined with a HM-55 heat mirror film by application to the outer glass surface.--

Page 75, line 1-18:

--[EZ-Kool™] EZ-KOOL™ glass which is a green tinted glass of increased cerium oxide and iron oxide content, available from Libbey Owens Ford of Toledo, Ohio, or with equivalent specialized UV-absorbing glasses as described above in connection with the electrochromic mirrors. Such specialized UV-absorbing glasses have a higher iron oxide content of within the range of about 0.2% to 0.9% by weight and/or a higher cerium oxide content of 0.2% to 0.9% by weight. Even higher iron oxide and/or cerium oxide contents, such as 1% to 2% or

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more, can be contemplated, for applications such as sunroofs, etc., where the dark tinting that accompanies such high levels of iron oxide and/or cerium oxide may not be product objectionable. For specialized UV absorbing glasses that have a high iron oxide content, it is desirable to maximize UV absorption by maximizing the ferric (Fe III) ion content of the glass. Alternately, a specialized UV absorbing glass of titanium dioxide content greater than 0.2 weight percent or thereabouts can be used.--

Page 78, lines 1-30:

--Element 216 consists of panels 251, 252. Panel 252 is a blue-tinted, UV-absorbing specialized glass (3 mm thickness) available from Ford Glass Company, Detroit, Michigan, under the trademark SUNGLAS™ BLUE. Layers 257a and 257b are blue-tinted plasticized polyvinylbutyral sheeting, each of sheet thickness 0.030", available from E.I. duPont de Nemours and Company of Wilmington, Delaware, under the trade name BUTACITE™ Cobalt Blue B140 0547800. Layer 250 is a specialized near-infrared reflector available from Southwall Corporation of Palo Alto, California, under the trade name HM-55 film. Element 212 and panel 251 were coated on their respective surfaces 213 and 217 with a transparent conducting layer of full-wave indium tin oxide (ITO) of thickness approximately 3000 angstroms and of 7 ohms/square or thereabouts sheet resistance. The interpane gap 218 between elements 212 and 216 was about 135 microns in thickness. The electrochromic medium 220 was an electrochemichromic solution comprising:

0.035 M	ethylviologen perchlorate
0.035 M	5, 10-dihydro-5, 10-dimethylphenazine
5% wt/vol	UVINUL™ 400
	(2, 4-dihydroxy-benzophenone)

dissolved in a solvent comprising 75% by volume 3-hydroxypropionitrile and 25% glutaronitrile. Coloration was achieved by applying 1 volt potential across the electrochromic medium 220. Antilacerative layer 214 is a two-layer composite comprising an inner tear-resistant sheet 214a of plasticized polyvinylbutyral and an outer abrasion resistant layer 214b of polyester, and is marketed under the trademark BE 1028 by E.I. duPont, Wilmington, Delaware.--

Page 79, lines 1-20:

--Layer 214 can also include silicone moieties chemically incorporated in the anti-lacerative composite to prevent condensation and/or beading up of condensed water on the coated front surface 211 of element 212, in high humidity conditions thereby providing an anti-fogging, anti-misting result. A material found useful as anti-lacerative, anti-fogging layer is silicone impregnated polyurethane layer 214' of sunroof/glazing embodiment 206' shown in Fig. 42A. Layer 214' is supplied under the trade name CLARIFLEX™ by Saint-Gobain Vitrage of Paris, France. UV reducing additives such as those described in connection with Fig. 2 may also be incorporated in the anti-lacerative, anti-fogging layer to increase the lifetime of the assembly. Alternately, element 212 may be fashioned from conventional soda lime glass, UV reducing specialized glasses, or polymer plastics. It is also possible to utilize thin film coatings or UV reducing paints or lacquers on at least one surface of front element 212 when the anti-lacerative, anti-fogging layer is incorporated. Likewise, it is possible to apply a near-infrared reflector incorporating a thin elemental metal film to front surface 211 of element 212.--

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Page 82, lines 1-31:

--chemicals used in electrochromic medium 220. Likewise, and particularly for applications such as a sunroof, sun visor, or shade band where sun glare reduction, good shading efficiency, and good thermal insulation performance is desirable, at least one of elements 212, 216, 251 and 252 can be formed from architectural glass such as SOLARBRONZE™, a bronze tinted glass; SOLARGRAY™, a gray tinted glass; GRAYLITE™, a dark gray tinted glass; and SOLEX™, a green tinted glass; all available from Pittsburgh Plate Glass Industries of Pittsburgh, Pennsylvania; SUNGLAS™ Gray, a gray tinted glass; and SUNGLAS™ bronze, a bronze tinted glass; available from Ford Glass Company, Detroit, Michigan; and with [E-Z-Eye™] E-Z-EYE™, a green tinted glass; available from Libby [Ownes] Owens Ford of Toledo, Ohio. Further, elements 212, 216, 251 and 252 can be coated with low-emittance monolithic architectural coatings such as SUNGATE™ 100, a low emittance, high transmittance coating available from Pittsburgh Plate Glass Industries of Pittsburgh, Pennsylvania; and SUNGLAS™ HR, a low emittance, high transmittance coating available from Ford Glass Company, Detroit, Michigan. Also, ECLIPSE™, pyrolytic Low-E coating available from Libby Owens Ford of Toledo, Ohio can be used. Further, elements 212, 216, 251 and 252 can be coated with vacuum deposited architectural coatings such as SOLARBAN™ available from Pittsburgh Plate Glass Industries of Pittsburgh, Pennsylvania, or can be coated with KOOLOF™, a solar control coating available from Libby [Ownes] Owens Ford of Toledo, Ohio.

Further, [perimetal] perimetric or perimeter coatings and darkened/color matched seals, as described in [copending patent application serial no. 07/454,398, filed December 21, 1989] United States Patent No. 5,066,112, entitled--

Page 83, lines 1-24:

--PERIMETER COATED, ELECTRO-OPTIC MIRROR, invented by Niall R. Lynam, the disclosure of which is hereby incorporated by reference herein, can be applied to window glazing constructions such as shown in Figs. 37, 40 and 43. For example, [perimetal] perimetric or perimeter coatings, 310 and 311 of Fig. 43, of a conductive black frit or paint, can be applied around the perimeter of surface layers 312a and 217a so as to hide from view the seal 229 and the connection of electrical leads 22, 24 to layers 213a, 217a. A suitable material is ENGLEHARD SC 6002 (# 6082), a platinum/palladium conductive ink available from Englehard Corporation of Iselin, New Jersey. Also, seal 229 can be color matched to any bezels, gaskets, encapsulants, or vehicular body moldings used to fix the electrochromic window assembly into a vehicle. For example, carbon black, in a nonconducting form, could be added to seal 229 in order to render it color matched to any black or dark rubber or plastic encapsulation means used to secure the electrochromic assembly into the vehicle. Alternately, [perimetal] perimetric or perimeter coatings 410, 420, as shown by the dashed lines on Fig. 43, and formed from, for example, a frit material such as DRAKENFELD™ black enamel 24-1729 available from Drakenfeld Colors of Wilmington, Pennsylvania, can be used to obscure from view the seal/electrical means used in the assembly.--

Page 100, please delete the present Abstract, at lines 4-27 and insert the following:

--A glazing/window assembly with reduced ultraviolet (UV) radiation transmission may include at least a pair of glass panels or other elements confining an electrochromic medium therebetween. Ultraviolet radiation reducing material is incorporated for reducing ultraviolet radiation transmission through the assembly. The ultraviolet

radiation reducing material comprises at least one of an ultraviolet absorber, an ultraviolet absorbing polymer, and an ultraviolet absorbing glass. At least one of a laminated glass panel, tempered glass panel and a polymeric layer is provided to prevent injury upon impact to the assembly. A color tint may be included in the assembly to provide a tint to transmitted light.--

In the Drawings:

Please amend the drawings by adding proposed new Fig. 42A, which is substantially identical to Fig. 42 except for the inclusion of a single silicone impregnated polyurethane layer 214', which layer 214' is already referred to in the original specification on page 79. This drawing change, as well as additional changes which overcome the informalities noted in the originally filed application Serial No. 07/732,572, filed July 18, 1991, are shown on the attached 24 sheets of proposed formal ink drawings for which approval of the Examiner is requested. It is noted that all of these drawing changes, including the proposed new Fig. 42A, were approved by the Examiner in application Serial No. 07/732,572, filed July 18, 1991, now U.S. Patent No. 5,239,406, and were entered in that application. Approval and entry of these corrected formal drawings is respectfully requested.

In the Claims:

Please cancel claims 1-75.

Please add new claims 76-357 as follows:

76. A reduced ultraviolet transmitting, safety-protected, variable transmission, vehicular glazing assembly suitable for use in a vehicle having an interior and an exterior, said assembly comprising:

at least first and second spaced optically transparent panels, said first panel located closest to the exterior of the vehicle when said assembly is mounted in the vehicle and

said second panel located closest to the interior of the vehicle when said assembly is mounted in the vehicle;

said first and said second panels each having a front surface and an opposing rear surface, said rear surface of said first panel facing and spaced from said front surface of said second panel defining a space between said first and second panels;

a variable transmission medium disposed in said space whose visible light transmittance is variable upon the application of an electric field thereto;

ultraviolet radiation reducing means incorporated in said assembly for reducing ultraviolet radiation transmission through said assembly wherein said ultraviolet radiation reducing means comprises at least one of an ultraviolet absorber, an ultraviolet absorbing polymer and an ultraviolet absorbing glass; and

safety means incorporated in said assembly for preventing injury upon impact to said assembly, said safety means comprising at least one of a laminated glass panel, a tempered glass panel and a polymeric layer.

77. The vehicular glazing assembly of claim 76 wherein said glazing assembly comprises a vehicle window.

78. The vehicular glazing assembly of claim 76 wherein said glazing assembly comprises a vehicle sunroof.

79. The vehicular glazing assembly of claim 76 wherein said glazing assembly comprises a vehicle sun visor.

80. The vehicular glazing assembly of claim 76 wherein said glazing assembly comprises a vehicle shade band.

81. The vehicular glazing assembly of claim 76 wherein at least one of said first and second panels comprises a tempered, glass panel.

82. The vehicular glazing assembly of claim 81 wherein each of said first and second panels comprises a tempered, glass panel.

83. The vehicular glazing assembly of claim 76 wherein at least said first panel comprises a tempered, glass panel.

84. The vehicular glazing assembly of claim 76 wherein at least one of said first and second panels comprises a tinted glass panel.

85. The vehicular glazing assembly of claim 84 wherein said tinted glass panel has a tint selected from the group consisting of a blue tint, a green tint, a blue/green tint, a bronze tint and a gray tint.

86. The vehicular glazing assembly of claim 76 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a single-layer polymer film.

87. The vehicular glazing assembly of claim 86 wherein said single-layer polymer film comprises polyurethane.

88. The vehicular glazing assembly of claim 76 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a two-layer polymer film.

89. The vehicular glazing assembly of claim 88 wherein one layer of said two-layer polymer film comprises plasticized polyvinylbutyral.

90. The vehicular glazing assembly of claim 89 wherein the other layer of said two-layer polymer film comprises polyester and wherein said polyvinylbutyral layer is disposed between said polyester layer and said rear surface of said second panel.

91. The vehicular glazing assembly of claim 76 wherein said variable transmission medium is disposed between a first and a second transparent conductor.

92. The vehicular glazing assembly of claim 91 wherein at least one of said first and second transparent conductors comprises one of indium tin oxide, doped tin oxide and doped zinc oxide.

93. The vehicular glazing assembly of claim 91 wherein both of said first and second transparent conductors comprise one of indium tin oxide, doped tin oxide and doped zinc oxide.

94. The vehicular glazing assembly of claim 91 wherein both of said first and second transparent conductors comprise indium tin oxide.

95. The vehicular glazing assembly of claim 76 wherein at least one of said first and second panels comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

96. The vehicular glazing assembly of claim 76 wherein at least said first panel comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

97. The vehicular glazing assembly of claim 96 wherein at least said first panel comprises a tempered, glass panel.

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98. The vehicular glazing assembly of claim 97 wherein at least said first panel comprises a glass panel bent to a compound curvature.

99. The vehicular glazing assembly of claim 76 wherein said assembly incorporates spectrally absorbing means for absorbing more light in those regions of the visible spectrum from about 560 nanometers to about 780 nanometers than is absorbed in those regions of the visible spectrum from about 400 nanometers to about 560 nanometers.

100. The vehicular glazing assembly of claim 76 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

101. The vehicular glazing assembly of claim 100 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

102. The vehicular glazing assembly of claim 100 wherein said additive comprises a benzophenone.

103. The vehicular glazing assembly of claim 100 wherein said additive comprises a benzotriazole.

104. The vehicular glazing assembly of claim 100 wherein said additive comprises a cyanoacrylate.

105. The vehicular glazing assembly of claim 100 wherein said variable transmission medium includes said additive.

106. The vehicular glazing assembly of claim 100 wherein said safety means comprises a

polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer including said additive.

107. The vehicular glazing assembly of claim 76 wherein said assembly includes near-infrared radiation transmission reducing means.

108. The vehicular glazing assembly of claim 107 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break, said near-infrared radiation transmission reducing means being located on at least one of said first panel, said second panel and said polymeric layer.

109. The vehicular glazing assembly of claim 108 wherein said near-infrared radiation transmission reducing means comprises a near-infrared reflector deposited onto said polymeric layer.

110. The vehicular glazing assembly of claim 76 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising an anti-fogging polymer layer.

111. The vehicular glazing assembly of claim 76 wherein at least one of said panels comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

112. The vehicular glazing assembly of claim 76 wherein said variable transmission medium of said assembly has a highest transmission state and wherein said assembly has a color tint in the visible light that is transmitted when said variable transmission medium is in said highest transmission state.

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113. The vehicular glazing assembly of claim 112 wherein said color tint is selected from the group including a blue tint, a green tint and a blue-green tint.

114. The vehicular glazing assembly of claim 76 wherein said tempered glass panel is tempered by one of thermal, contact and chemical tempering.

115. The vehicular glazing assembly of claim 76 wherein said assembly includes an infra-red reflector.

116. The vehicular glazing assembly of claim 115 wherein said infra-red reflector reflects at least about 30% of the solar energy for Air Mass 2 in the spectral region from 800 nanometers to 2500 nanometers.

117. The vehicular glazing assembly of claim 76 wherein at least one of said panels is tinted.

118. The vehicular glazing assembly of claim 117 wherein said at least one tinted panel has one of a blue tint, a green tint and a blue-green tint.

119. The vehicular glazing assembly of claim 76 wherein said first panel comprises a glass panel.

120. The vehicular glazing assembly of claim 119 wherein said glass panel comprises a laminated glass panel.

121. The vehicular glazing assembly of claim 120 wherein said laminated glass panel comprises a curved laminated glass panel.

122. The vehicular glazing assembly of claim 121 wherein said curved laminated glass panel comprises a color tinted curved laminated glass panel.

123. The vehicular glazing assembly of claim 122 wherein said color tinted curved laminated glass panel comprises a color tinted laminating polymeric interlayer.

124. The vehicular glazing assembly of claim 123 wherein said color tinted laminating polymeric interlayer includes at least one ultraviolet absorber.

125. The vehicular glazing assembly of claim 124 wherein said color tinted laminating polymeric interlayer comprises polyvinyl butyral.

126. The vehicular glazing assembly of claim 119 wherein said first panel comprises a tempered glass panel.

127. The vehicular glazing assembly of claim 126 wherein said tempered glass panel comprises a curved tempered glass panel.

128. The vehicular glazing assembly of claim 127 wherein said tempered glass panel comprises a color tinted tempered glass panel.

129. The vehicular glazing assembly of claim 128 wherein said color tinted tempered glass panel comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

130. The vehicular glazing assembly of claim 76 wherein said ultraviolet radiation reducing means are included in said variable transmission medium.

131. The vehicular glazing assembly of claim 130 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

132. The vehicular glazing assembly of claim 131 wherein said additive is selected from the

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group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

133. The vehicular glazing assembly of claim 131 wherein said additive comprises a benzophenone.

134. The vehicular glazing assembly of claim 131 wherein said additive comprises a benzotriazole.

135. The vehicular glazing assembly of claim 131 wherein said additive comprises a cyanoacrylate.

136. The vehicular glazing assembly of claim 131 wherein said additive comprises an oxalanilide.

137. The vehicular glazing assembly of claim 131 wherein said additive comprises an amine.

138. The vehicular glazing assembly of claim 131 wherein said additive comprises a salicylate.

139. The vehicular glazing assembly of claim 131 wherein said additive comprises a nickel compound.

140. The vehicular glazing assembly of claim 76 wherein said variable transmission medium comprises an electrochromic medium.

141. The vehicular glazing assembly of claim 76 wherein said variable transmission medium comprises a liquid crystal medium.

142. A reduced ultraviolet transmitting, safety-protected, variable transmission, vehicular glazing assembly suitable for use in a vehicle having an interior and an exterior, said assembly comprising:

at least first and second spaced optically transparent panels, said first panel located closest to the exterior of the vehicle when said assembly is mounted in the vehicle and said second panel located closest to the interior of the vehicle when said assembly is mounted in the vehicle;

said first and said second panels each having a front surface and an opposing rear surface, said rear surface of said first panel facing and spaced from said front surface of said second panel defining a space between said first and second panels;

a variable transmission medium disposed in said space whose visible light transmittance is variable upon the application of an electric field thereto;

ultraviolet radiation reducing means incorporated in said assembly for reducing ultraviolet radiation transmission through said assembly wherein said ultraviolet radiation reducing means comprises at least one of an ultraviolet absorber, an ultraviolet absorbing polymer and an ultraviolet absorbing glass;

safety means incorporated in said assembly for preventing injury upon impact to said assembly, said safety means comprising at least one of a laminated glass panel, a tempered glass panel and a polymeric layer; and

tinting means incorporated in said assembly for providing a color tint to light transmitted through said assembly.

143. The vehicular glazing assembly of claim 142 wherein said glazing assembly comprises a vehicle window.

144. The vehicular glazing assembly of claim 142 wherein said glazing assembly comprises a vehicle sunroof.

145. The vehicular glazing assembly of claim 142 wherein said glazing assembly comprises

a vehicle sun visor.

146. The vehicular glazing assembly of claim 142 wherein said glazing assembly comprises a vehicle shade band.

147. The vehicular glazing assembly of claim 142 wherein at least one of said first and second panels comprises a tempered glass panel.

148. The vehicular glazing assembly of claim 147 wherein each of said first and second panels comprises a tempered glass panel.

149. The vehicular glazing assembly of claim 142 wherein at least said first panel comprises a tempered glass panel.

150. The vehicular glazing assembly of claim 142 wherein at least one of said first and second panels comprises a tinted glass panel.

151. The vehicular glazing assembly of claim 150 wherein said tinted glass panel has a tint selected from the group consisting of a blue tint, a green tint, a blue/green tint, a bronze tint and a gray tint.

152. The vehicular glazing assembly of claim 76 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a single-layer polymer film.

153. The vehicular glazing assembly of claim 152 wherein said single-layer polymer film comprises polyurethane.

154. The vehicular glazing assembly of claim 142 wherein said safety means comprises a

polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a two-layer polymer film.

155. The vehicular glazing assembly of claim 154 wherein one layer of said two-layer polymer film comprises plasticized polyvinylbutyral.

156. The vehicular glazing assembly of claim 155 wherein the other layer of said two-layer polymer film comprises polyester and wherein said polyvinylbutyral layer is disposed between said polyester layer and said rear surface of said second panel.

157. The vehicular glazing assembly of claim 142 wherein said variable transmission medium is disposed between a first and a second transparent conductor.

158. The vehicular glazing assembly of claim 157 wherein at least one of said first and second transparent conductors comprises one of indium tin oxide, doped tin oxide and doped zinc oxide.

159. The vehicular glazing assembly of claim 157 wherein both of said first and second transparent conductors comprise one of indium tin oxide, doped tin oxide and doped zinc oxide.

160. The vehicular glazing assembly of claim 157 wherein both of said first and second transparent conductors comprise indium tin oxide.

161. The vehicular glazing assembly of claim 142 wherein at least one of said first and second panels comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

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162. The vehicular glazing assembly of claim 142 wherein at least said first panel comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

163. The vehicular glazing assembly of claim 162 wherein at least said first panel comprises a tempered glass panel.

164. The vehicular glazing assembly of claim 163 wherein at least said first panel comprises a glass panel bent to a compound curvature.

165. The vehicular glazing assembly of claim 142 wherein said assembly incorporates spectrally absorbing means for absorbing more light in those regions of the visible spectrum from about 560 nanometers to about 780 nanometers than is absorbed in those regions of the visible spectrum from about 400 nanometers to about 560 nanometers.

166. The vehicular glazing assembly of claim 142 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

167. The vehicular glazing assembly of claim 166 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

168. The vehicular glazing assembly of claim 166 wherein said additive comprises a benzophenone.

169. The vehicular glazing assembly of claim 166 wherein said additive comprises a benzotriazole.

170. The vehicular glazing assembly of claim 166 wherein said additive comprises a cyanoacrylate.

171. The vehicular glazing assembly of claim 166 wherein said variable transmission medium includes said additive.

172. The vehicular glazing assembly of claim 166 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer including said additive.

173. The vehicular glazing assembly of claim 142 wherein said assembly includes near-infrared radiation transmission reducing means.

174. The vehicular glazing assembly of claim 173 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break, said near-infrared radiation transmission reducing means being located on at least one of said first panel, said second panel and said polymeric layer.

175. The vehicular glazing assembly of claim 174 wherein said near-infrared radiation transmission reducing means comprises a near-infrared reflector deposited onto said polymeric layer.

176. The vehicular glazing assembly of claim 142 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising an anti-fogging polymeric layer.

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177. The vehicular glazing assembly of claim 142 wherein at least one of said panels comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

178. The vehicular glazing assembly of claim 142 wherein said variable transmission medium of said assembly has a highest transmission state and wherein said assembly has a color tint in the visible light that is transmitted when said variable transmission medium is in said highest transmission state.

179. The vehicular glazing assembly of claim 178 wherein said color tint is selected from the group including a blue tint, a green tint and a blue-green tint.

180. The vehicular glazing assembly of claim 142 wherein said tempered glass panel is tempered by one of thermal, contact and chemical tempering.

181. The vehicular glazing assembly of claim 142 wherein said assembly includes an infra-red reflector.

182. The vehicular glazing assembly of claim 181 wherein said infra-red reflector reflects at least about 30% of the solar energy for Air Mass 2 in the spectral region from 800 nanometers to 2500 nanometers.

183. The vehicular glazing assembly of claim 142 wherein at least one of said panels is tinted.

184. The vehicular glazing assembly of claim 183 wherein said at least one tinted panel has one of a blue tint, a green tint and a blue-green tint.

185. The vehicular glazing assembly of claim 142 wherein said first panel comprises a glass panel.

186. The vehicular glazing assembly of claim 185 wherein said glass panel comprises a laminated glass panel.

187. The vehicular glazing assembly of claim 186 wherein said laminated glass panel comprises a curved laminated glass panel.

188. The vehicular glazing assembly of claim 187 wherein said curved laminated glass panel comprises a color tinted curved laminated glass panel.

189. The vehicular glazing assembly of claim 188 wherein said color tinted curved laminated glass panel comprises a color tinted laminating polymeric interlayer.

190. The vehicular glazing assembly of claim 189 wherein said color tinted laminating polymeric interlayer includes at least one ultraviolet absorber.

191. The vehicular glazing assembly of claim 190 wherein said color tinted laminating polymeric interlayer comprises polyvinyl butyral.

192. The vehicular glazing assembly of claim 185 wherein said first panel comprises a tempered glass panel.

193. The vehicular glazing assembly of claim 192 wherein said tempered glass panel comprises a curved tempered glass panel.

194. The vehicular glazing assembly of claim 193 wherein said tempered glass panel comprises a color tinted tempered glass panel.

195. The vehicular glazing assembly of claim 194 therein said color tempered glass panel comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of

cerium oxide, iron oxide and titanium oxide.

196. The vehicular glazing assembly of claim 142 wherein said ultraviolet radiation reducing means are included in said variable transmission medium.

197. The vehicular glazing assembly of claim 196 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

198. The vehicular glazing assembly of claim 197 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

199. The vehicular glazing assembly of claim 197 wherein said additive comprises a benzophenone.

200. The vehicular glazing assembly of claim 197 wherein said additive comprises a benzotriazole.

201. The vehicular glazing assembly of claim 197 wherein said additive comprises a cyanoacrylate.

202. The vehicular glazing assembly of claim 197 wherein said additive comprises an oxalanilide.

203. The vehicular glazing assembly of claim 197 wherein said additive comprises an amine.

204. The vehicular glazing assembly of claim 197 wherein said additive comprises a salicylate.

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205. The vehicular glazing assembly of claim 197 wherein said additive comprises a nickel compound.

206. The vehicular glazing assembly of claim 142 wherein said variable transmission medium comprises an electrochromic medium.

207. The vehicular glazing assembly of claim 142 wherein said variable transmission medium comprises a liquid crystal medium.

208. The vehicular glazing assembly of claim 142 wherein said tinting means comprises at least one of a color tinted panel, a color tinted polymer and a dye.

209. The vehicular glazing assembly of claim 142 wherein said tinting means is included in said variable transmission medium.

210. The vehicular glazing assembly of claim 209 wherein said tinting means comprises an organic dye that is not electro-optically active.

211. The vehicular glazing assembly of claim 142 wherein said tinting means is included in at least one of said first and second panels.

212. The vehicular glazing assembly of claim 142 wherein said safety means comprises a laminated glass panel; said tinting means being included in said laminated glass panel.

213. The vehicular glazing assembly of claim 142 wherein said safety means comprises a tempered glass panel; said tinting means being included in said tempered glass panel.

214. The vehicular glazing assembly of claim 142 wherein said safety means comprises a polymeric layer; said tinting means being included in said polymeric layer.

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215. A reduced ultraviolet transmitting, safety-protected, variable transmission, vehicular glazing assembly suitable for use in a vehicle having an interior and an exterior, said assembly comprising:

at least first and second spaced optically transparent panels, said first panel located closest to the exterior of the vehicle when said assembly is mounted in the vehicle and said second panel located closest to the interior of the vehicle when said assembly is mounted in the vehicle;

said first and said second panels each having a front surface and an opposing rear surface, said rear surface of said first panel facing and spaced from said front surface of said second panel defining a space between said first and second panels;

a variable transmission medium disposed in said space whose visible light transmittance is variable upon the application of an electric field thereto;

ultraviolet radiation reducing means incorporated in said assembly for reducing ultraviolet radiation transmission through said assembly wherein said ultraviolet reducing means comprises at least one of an ultraviolet absorber, an ultraviolet absorbing polymer and an ultraviolet absorbing glass;

safety means incorporated in said assembly for preventing injury upon impact to said assembly, said safety means comprising at least one of a laminated glass panel, a tempered glass panel and a polymeric layer; and

wherein said assembly includes at least one curved glass panel.

216. The vehicular glazing assembly of claim 215 wherein said glazing assembly comprises a vehicle window.

217. The vehicular glazing assembly of claim 215 wherein said glazing assembly comprises a vehicle sunroof.

218. The vehicular glazing assembly of claim 215 wherein said glazing assembly comprises a vehicle sun visor.

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219. The vehicular glazing assembly of claim 215 wherein said glazing assembly comprises a vehicle shade band.

220. The vehicular glazing assembly of claim 215 wherein at least one of said first and second panels comprises a tempered glass panel.

221. The vehicular glazing assembly of claim 215 wherein each of said first and second panels comprises a tempered glass panel.

222. The vehicular glazing assembly of claim 215 wherein at least one said first and second panels comprises a curved tempered glass panel.

223. The vehicular glazing assembly of claim 215 wherein each of said first and second panels comprises a curved tempered glass panel.

224. The vehicular glazing assembly of claim 215 wherein at least one of said first and second panels comprises a tinted glass panel.

225. The vehicular glazing assembly of claim 224 wherein said tinted glass panel has a tint selected from the group consisting of a blue tint, a green tint, a blue/green tint, a bronze tint and a gray tint.

226. The vehicular glazing assembly of claim 215 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a single-layer polymer film.

227. The vehicular glazing assembly of claim 226 wherein said single-layer polymer film comprises polyurethane.

228. The vehicular glazing assembly of claim 215 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a two-layer polymer film.

229. The vehicular glazing assembly of claim 228 wherein one layer of said two-layer polymer film comprises plasticized polyvinylbutyral.

230. The vehicular glazing assembly of claim 229 wherein the other layer of said two-layer polymer film comprises polyester and wherein said polyvinylbutyral layer is disposed between said polyester layer and said rear surface of said second panel.

231. The vehicular glazing assembly of claim 215 wherein said variable transmission medium is disposed between a first and a second transparent conductor.

232. The vehicular glazing assembly of claim 231 wherein at least one of said first and second transparent conductors comprises one of indium tin oxide, doped tin oxide and doped zinc oxide.

233. The vehicular glazing assembly of claim 231 wherein both of said first and second transparent conductors comprise one of indium tin oxide, doped tin oxide and doped zinc oxide.

234. The vehicular glazing assembly of claim 231 wherein both of said first and second transparent conductors comprise indium tin oxide.

235. The vehicular glazing assembly of claim 215 wherein at least one of said first and second panels comprises a specialized glass transmitting in the visible portion of the

electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

236. The vehicular glazing assembly of claim 215 wherein at least said first panel comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

237. The vehicular glazing assembly of claim 236 wherein at least said first panel comprises a tempered glass panel.

238. The vehicular glazing assembly of claim 237 wherein at least said first panel comprises a glass panel bent to a compound curvature.

239. The vehicular glazing assembly of claim 215 wherein said assembly incorporates spectrally absorbing means for absorbing more light in those regions of the visible spectrum from about 560 nanometers to about 780 nanometers than is absorbed in those regions of the visible spectrum from about 400 nanometers to about 560 nanometers.

240. The vehicular glazing assembly of claim 215 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

241. The vehicular glazing assembly of claim 240 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

242. The vehicular glazing assembly of claim 240 wherein said additive comprises a benzophenone.

243. The vehicular glazing assembly of claim 240 wherein said additive comprises a benzotriazole.

244. The vehicular glazing assembly of claim 240 wherein said additive comprises a cyanoacrylate.

245. The vehicular glazing assembly of claim 240 wherein said variable transmission medium includes said additive.

246. The vehicular glazing assembly of claim 240 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer including said additive.

247. The vehicular glazing assembly of claim 215 wherein said assembly includes near-infrared radiation transmission reducing means.

248. The vehicular glazing assembly of claim 247 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break, said near-infrared radiation transmission reducing means being located on at least one of said first panel, said second panel and said polymeric layer.

249. The vehicular glazing assembly of claim 248 wherein said near-infrared radiation transmission reducing means comprises a near-infrared reflector deposited onto said polymeric layer.

250. The vehicular glazing assembly of claim 215 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric

layer comprising an anti-fogging polymer layer.

251. The vehicular glazing assembly of claim 215 wherein at least one of said panels comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

252. The vehicular glazing assembly of claim 215 wherein said variable transmission medium of said assembly has a highest transmission state and wherein said assembly has a color tint in the visible light that is transmitted when said variable transmission medium is in said highest transmission state.

253. The vehicular glazing assembly of claim 252 wherein said color tint is selected from the group including a blue tint, a green tint and a blue-green tint.

254. The vehicular glazing assembly of claim 215 wherein said tempered glass panel is tempered by one of thermal, contact and chemical tempering.

255. The vehicular glazing assembly of claim 215 wherein said assembly includes an infra-red reflector.

256. The vehicular glazing assembly of claim 255 wherein said infra-red reflector reflects at least about 30% of the solar energy for Air Mass 2 in the spectral region from 800 nanometers to 2500 nanometers.

257. The vehicular glazing assembly of claim 215 wherein at least one of said panels is tinted.

258. The vehicular glazing assembly of claim 257 wherein said at least one tinted panel has one of a blue tint, a green tint and a blue-green tint.

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259. The vehicular glazing assembly of claim 215 wherein said first panel comprises a glass panel.

260. The vehicular glazing assembly of claim 259 wherein said glass panel comprises a laminated glass panel.

261. The vehicular glazing assembly of claim 260 wherein said laminated glass panel comprises a curved laminated glass panel.

262. The vehicular glazing assembly of claim 261 wherein said curved laminated glass panel comprises a color tinted curved laminated glass panel.

263. The vehicular glazing assembly of claim 262 wherein said color tinted curved laminated glass panel comprises a color tinted laminating polymeric interlayer.

264. The vehicular glazing assembly of claim 263 wherein said color tinted laminating polymeric interlayer includes at least one ultraviolet absorber.

265. The vehicular glazing assembly of claim 264 wherein said color tinted laminating polymeric interlayer comprises polyvinyl butyral.

266. The vehicular glazing assembly of claim 259 wherein said first panel comprises a tempered glass panel.

267. The vehicular glazing assembly of claim 266 wherein said tempered glass panel comprises a curved tempered glass panel.

268. The vehicular glazing assembly of claim 267 wherein said tempered glass panel comprises a color tinted tempered glass panel.

269. The vehicular glazing assembly of claim 268 wherein said color tinted tempered glass panel comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

270. The vehicular glazing assembly of claim 215 wherein said ultraviolet radiation reducing means are included in said variable transmission medium.

271. The vehicular glazing assembly of claim 270 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

272. The vehicular glazing assembly of claim 271 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

273. The vehicular glazing assembly of claim 271 wherein said additive comprises a benzophenone.

274. The vehicular glazing assembly of claim 271 wherein said additive comprises a benzotriazole.

275. The vehicular glazing assembly of claim 271 wherein said additive comprises a cyanoacrylate.

276. The vehicular glazing assembly of claim 271 wherein said additive comprises an oxalanilide.

277. The vehicular glazing assembly of claim 271 wherein said additive comprises an amine.

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278. The vehicular glazing assembly of claim 271 wherein said additive comprises a salicylate.

279. The vehicular glazing assembly of claim 271 wherein said additive comprises a nickel compound.

280. The vehicular glazing assembly of claim 215 wherein said variable transmission medium comprises an electrochromic medium.

281. The vehicular glazing assembly of claim 215 wherein said variable transmission medium comprises a liquid crystal medium.

282. The vehicular glazing assembly of claim 215 wherein said at least one curved glass panel comprises a curved tempered glass panel.

283. The vehicular glazing assembly of claim 215 wherein said at least one curved glass panel comprises a curved laminated glass panel.

284. The vehicular glazing assembly of claim 215 wherein said safety means comprises a polymeric layer, said at least one curved glass panel being contacted by said polymeric layer.

285. A reduced ultraviolet transmitting, safety-protected, variable transmission, window assembly having an exterior surface subject to direct exposure to a source of solar insolation and an interior surface spaced from said exterior surface, said interior surface being located further from said source of solar insolation than said exterior surface, said assembly comprising:

at least first and second spaced optically transparent panels, said first panel located closest to said exterior surface of said window assembly when said assembly is mounted for exposure to a source of solar insolation and said second panel located closest to

said interior surface of said window assembly when said assembly is mounted for exposure to a source of solar insolation;

said first and said second panels each having a front surface and an opposing rear surface, said rear surface of said first panel facing and spaced from said front surface of said second panel defining a space between said first and second panels;

a variable transmission medium disposed in said space whose visible light transmittance is variable upon the application of an electric field thereto;

ultraviolet radiation reducing means incorporated in said assembly for reducing ultraviolet radiation transmission through said assembly wherein said ultraviolet reducing means comprises at least one of an ultraviolet absorber, an ultraviolet absorbing polymer and an ultraviolet absorbing glass;

safety means incorporated in said assembly for preventing injury upon impact to said assembly, said safety means comprising at least one of a laminated glass panel, a tempered glass panel and a polymeric layer; and

wherein said variable transmission medium of said assembly has a highest transmission state and wherein said assembly has a color tint in the visible light that is transmitted when said variable transmission medium is in said highest transmission state.

286. The window assembly of claim 285 wherein said glazing assembly comprises a vehicular window assembly.

287. The window assembly of claim 285 wherein said glazing assembly comprises a vehicular sunroof assembly.

288. The window assembly of claim 285 wherein said glazing assembly comprises a vehicular sun visor.

289. The window assembly of claim 285 wherein said glazing assembly comprises a vehicular shade band.

290. The window assembly of claim 285 wherein said second panel includes a mirror reflector coating on a surface thereof.

291. The window assembly of claim 290 wherein said glazing assembly is included in a mirror assembly for a vehicle.

292. The window assembly of claim 291 wherein said mirror assembly for a vehicle comprises an exterior mirror assembly.

293. The window assembly of claim 285 wherein at least one of said first and second panels comprises a tempered glass panel.

294. The window assembly of claim 285 wherein each of said first and second panels comprises a tempered, glass panel.

295. The window assembly of claim 285 wherein at least one of said first and second panels comprises a curved tempered glass panel.

296. The window assembly of claim 285 wherein each of said first and second panels comprises a curved tempered glass panel.

297. The window assembly of claim 285 wherein at least one of said first and second panels comprises a tinted glass panel.

298. The window assembly of claim 297 wherein said tinted glass panel has a tint selected from the group consisting of a blue tint, a green tint, a blue/green tint, a bronze tint and a gray tint.

299. The window assembly of claim 285 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for

preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a single-layer polymer film.

300. The window assembly of claim 299 wherein said single-layer polymer film comprises polyurethane.

301. The window assembly of claim 285 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising a two-layer polymer film.

302. The window assembly of claim 301 wherein one layer of said two-layer polymer film comprises plasticized polyvinylbutyral.

303. The window assembly of claim 302 wherein the other layer of said two-layer polymer film comprises polyester and wherein said polyvinylbutyral layer is disposed between said polyester layer and said rear surface of said second panel.

304. The window assembly of claim 285 wherein said variable transmission medium is disposed between a first and a second transparent conductor.

305. The window assembly of claim 304 wherein at least one of said first and second transparent conductors comprises one of indium tin oxide, doped tin oxide and doped zinc oxide.

306. The window assembly of claim 304 wherein both of said first and second transparent conductors comprise one of indium tin oxide, doped tin oxide and doped zinc oxide.

307. The window assembly of claim 304 wherein both of said first and second transparent conductors comprise indium tin oxide.

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308. The window assembly of claim 285 wherein at least one of said first and second panels comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

309. The window assembly of claim 285 wherein at least said first panel comprises a specialized glass transmitting in the visible portion of the electromagnetic spectrum and having reduced transmission in the ultraviolet portion of the electromagnetic spectrum.

310. The window assembly of claim 309 wherein at least said first panel comprises a tempered glass panel.

311. The window assembly of claim 310 wherein at least said first panel comprises a glass panel bent to a compound curvature.

312. The window assembly of claim 285 wherein said assembly incorporates spectrally absorbing means for absorbing more light in those regions of the visible spectrum from about 560 nanometers to about 780 nanometers than is absorbed in those regions of the visible spectrum from about 400 nanometers to about 560 nanometers.

313. The window assembly of claim 285 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

314. The window assembly of claim 313 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

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315. The window assembly of claim 313 wherein said additive comprises a benzophenone.

316. The window assembly of claim 313 wherein said additive comprises a benzotriazole.

317. The window assembly of claim 313 wherein said additive comprises a cyanoacrylate.

318. The window assembly of claim 313 wherein said variable transmission medium includes said additive.

319. The window assembly of claim 313 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer including said additive.

320. The window assembly of claim 285 wherein said assembly includes near-infrared radiation transmission reducing means.

321. The window assembly of claim 320 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break, said near-infrared radiation transmission reducing means being located on at least one of said first panel, said second panel and said polymeric layer.

322. The window assembly of claim 321 wherein said near-infrared radiation transmission reducing means comprises a near-infrared reflector deposited onto said polymeric layer.

323. The window assembly of claim 285 wherein said safety means comprises a polymeric layer, said polymeric layer being disposed on said rear surface of said second panel for preventing lacerative injuries should said second panel crack or break; said polymeric layer comprising an anti-fogging polymer layer.

324. The window assembly of claim 285 wherein at least one of said panels comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

325. The window assembly of claim 285 wherein said assembly includes at least one curved glass panel.

326. The window assembly of claim 285 wherein said assembly includes a color tint selected from the group including a blue tint, a green tint and a blue-green tint.

327. The window assembly of claim 285 wherein said tempered glass panel is tempered by one of thermal, contact and chemical tempering.

328. The window assembly of claim 285 wherein said assembly includes an infra-red reflector.

329. The window assembly of claim 328 wherein said infra-red reflector reflects at least about 30% of the solar energy for Air Mass 2 in the spectral region from 800 nanometers to 2500 nanometers.

330. The window assembly of claim 285 wherein at least one of said panels is tinted.

331. The window assembly of claim 330 wherein said at least one tinted panel has one of a blue tint, a green tint and a blue-green tint.

332. The window assembly of claim 285 wherein said first panel comprises a glass panel.

333. The window assembly of claim 332 wherein said glass panel comprises a laminated glass panel.

334. The window assembly of claim 333 wherein said laminated glass panel comprises a curved laminated glass panel.

335. The window assembly of claim 334 wherein said curved laminated glass panel comprises a color tinted curved laminated glass panel.

336. The window assembly of claim 335 wherein said color tinted curved laminated glass panel comprises a color tinted laminating polymeric interlayer.

337. The window assembly of claim 336 wherein said color tinted laminating polymeric interlayer includes at least one ultraviolet absorber.

338. The window assembly of claim 337 wherein said color tinted laminating polymeric interlayer comprises polyvinyl butyral.

339. The window assembly of claim 332 wherein said first panel comprises a tempered glass panel.

340. The window assembly of claim 339 wherein said tempered glass panel comprises a curved tempered glass panel.

341. The window assembly of claim 340 wherein said tempered glass panel comprises a color tinted tempered glass panel.

342. The window assembly of claim 341 wherein said color tinted tempered glass panel comprises an ultraviolet absorbing glass comprising at least 0.2 weight percent of one of cerium oxide, iron oxide and titanium oxide.

343. The window assembly of claim 285 wherein said ultraviolet radiation reducing means

are included in said variable transmission medium.

344. The window assembly of claim 343 wherein said ultraviolet radiation reducing means comprises an additive for absorbing, blocking and/or screening ultraviolet radiation.

345. The window assembly of claim 344 wherein said additive is selected from the group consisting of benzophenones, cinnamic acid derivatives, esters of benzoin acids, salicyclic acid, terephthalic and isophthalic acids with resorcinol and phenols, pentamethyl piperidine derivatives, salicylates, benzotriazoles, cyanoacrylates, benzilidenes, malonates, hindered amines, organo-nickel complexes, nickel chelates and oxalanilides.

346. The window assembly of claim 344 wherein said additive comprises a benzophenone.

347. The window assembly of claim 344 wherein said additive comprises a benzotriazole.

348. The window assembly of claim 344 wherein said additive comprises a cyanoacrylate.

349. The window assembly of claim 344 wherein said additive comprises an oxalanilide.

350. The window assembly of claim 344 wherein said additive comprises an amine.

351. The window assembly of claim 344 wherein said additive comprises a salicylate.

352. The window assembly of claim 344 wherein said additive comprises a nickel compound.

353. The window assembly of claim 285 wherein said variable transmission medium comprises an electrochromic medium.

354. The window assembly of claim 285 wherein said variable transmission medium

comprises a liquid crystal medium.

355. The window assembly of claim 285 wherein said window assembly comprises a polymeric layer, a curved tempered glass panel.

356. The window assembly of claim 285 wherein said window assembly comprises a curved laminated glass panel.

357. The window assembly of claim 285 wherein said safety means comprises said window assembly being contacted by said polymeric layer.

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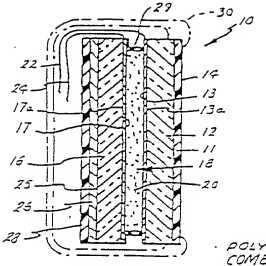

Fig. 1.

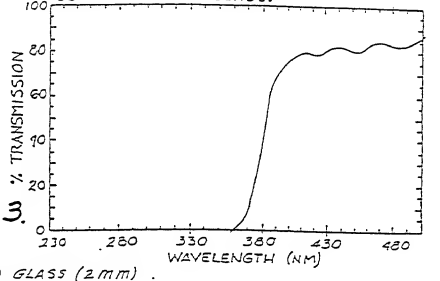

Fig. 3.

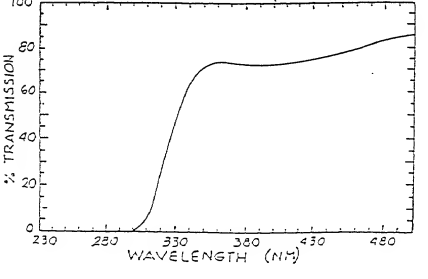

Fig. 4.

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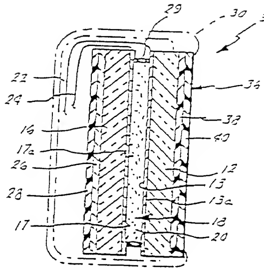

Fig. 2.

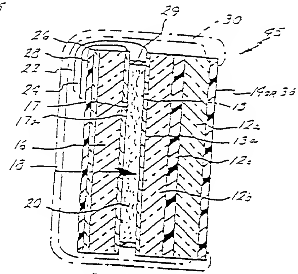

Fig. 5.

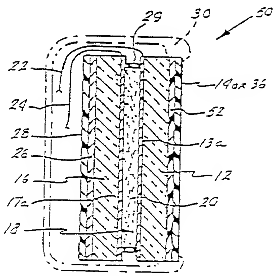

Fig. 6.

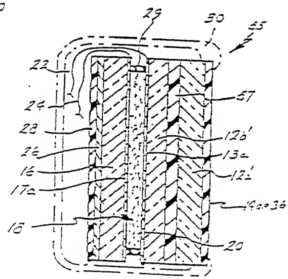

Fig. 7.

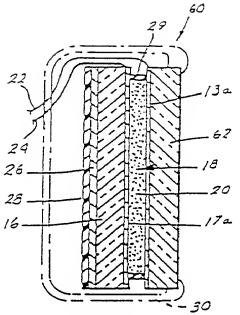

Fig. 8.

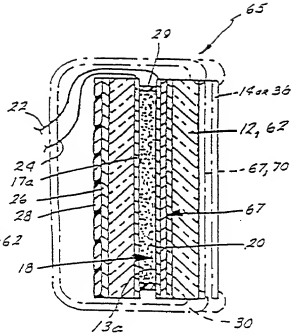

Fig. 9.

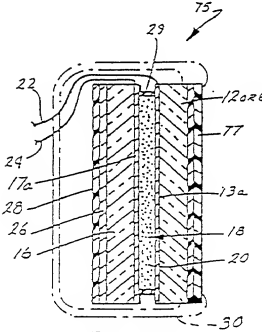

Fig. 10.

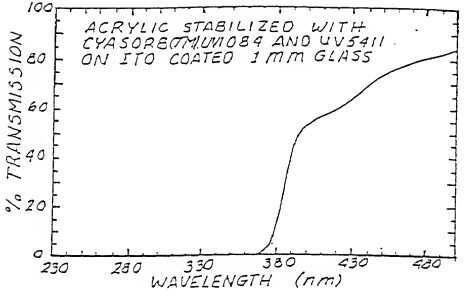

Fig.11.

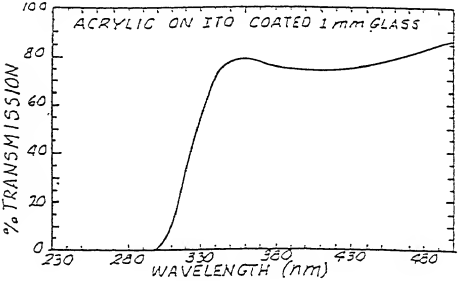

Fig.12.

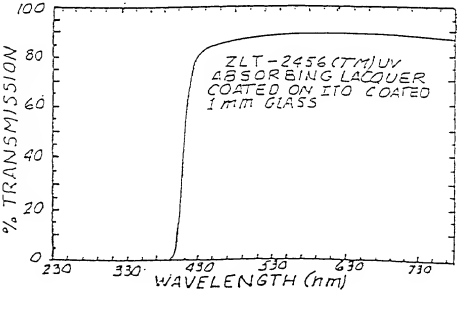

Fig.13.

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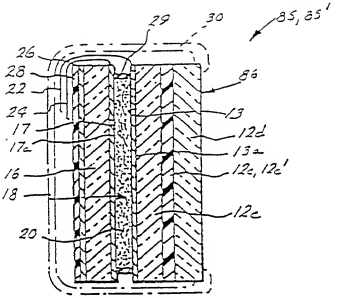

Fig. 14.

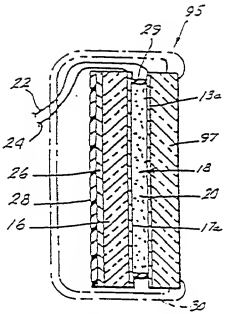

Fig. 15.

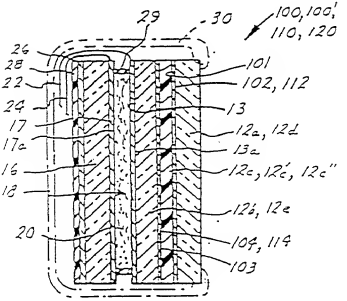

Fig. 16.

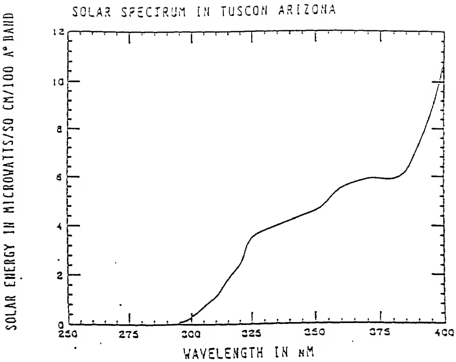

FIG. 17

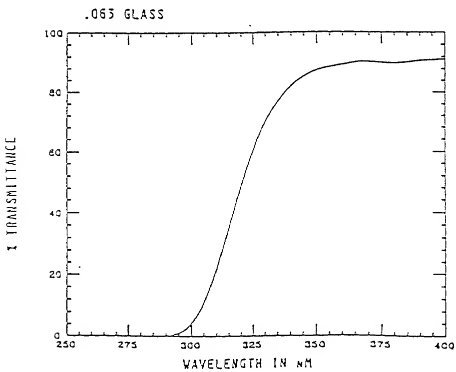

FIG. 18A

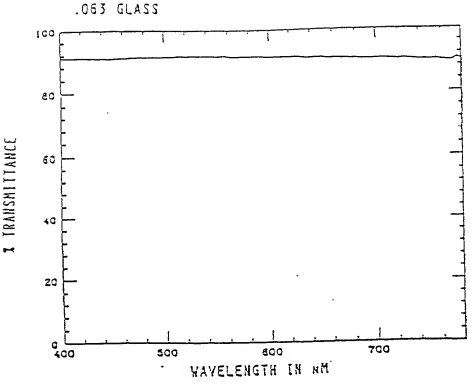

FIG. 18B

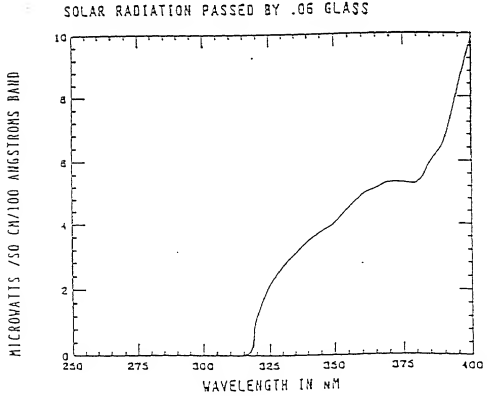

FIG. 19

T06007*03E2660

0997320.1000601

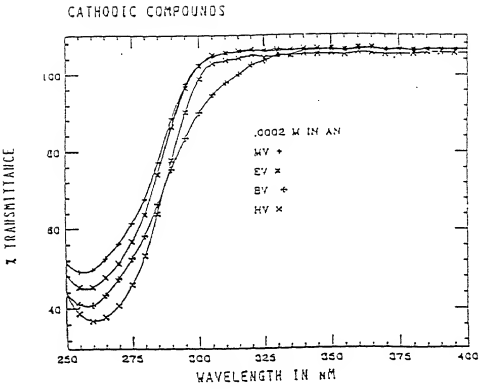

FIG. 20

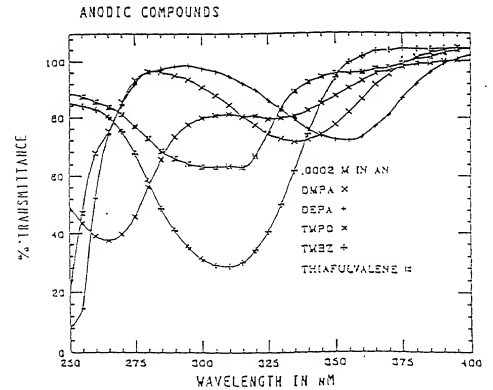

FIG. 21

FR 2822680

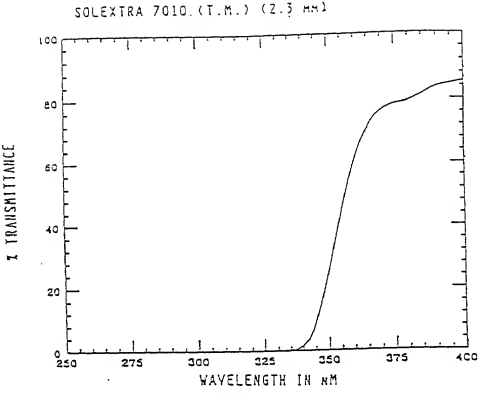

FIG. 22A

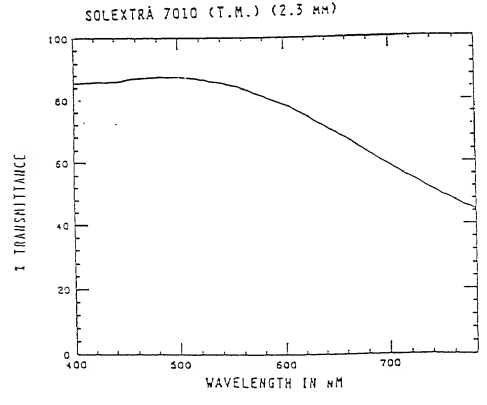

FIG. 22B

T06001*02E2650

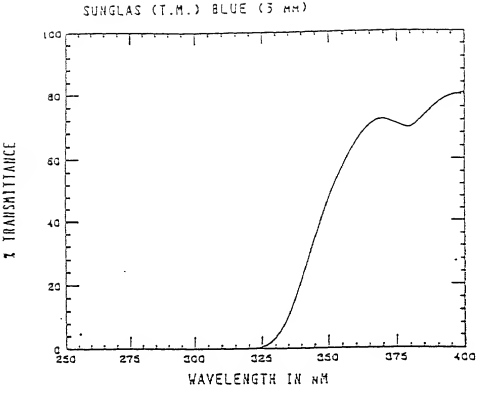

FIG. 23A

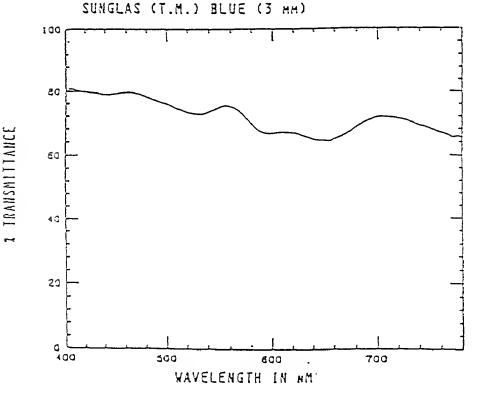

FIG. 23B

US6007-0225Z660

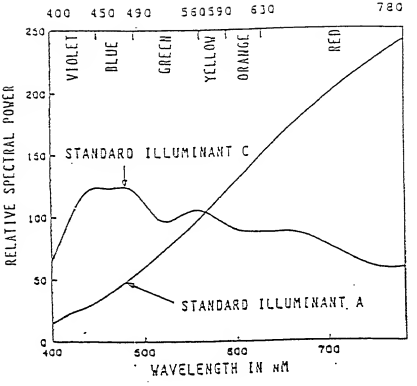

FIG. 24

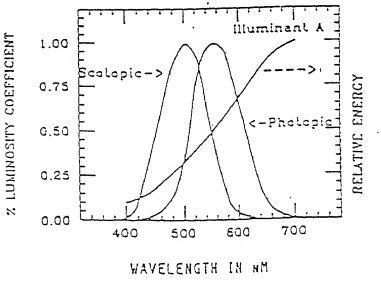

FIG. 25

106001-022660

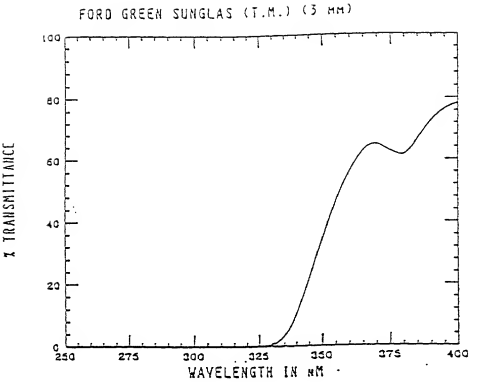

FIG. 26A

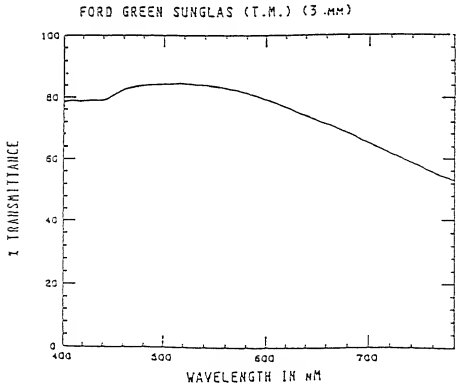

FIG. 26B

SAFLEX (T.M.) SR#11

PVB LAMINATED PIECE WITH TWO CLEAR SODALIME GLASS PANELS

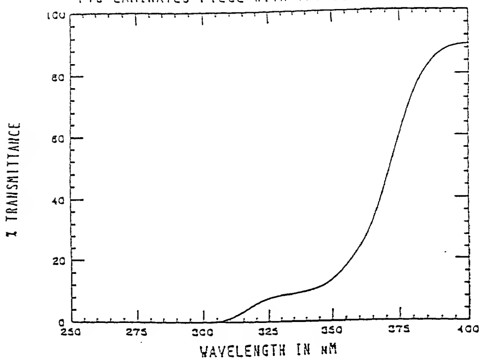

FIG. 27A

SAFLEX (T.M.) SR#11

PVB LAMINATED PIECE WITH TWO CLEAR SODALIME GLASS PANELS

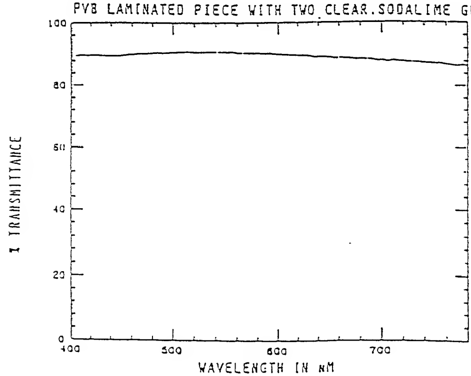

FIG. 27B

TOSHIBA-0022660

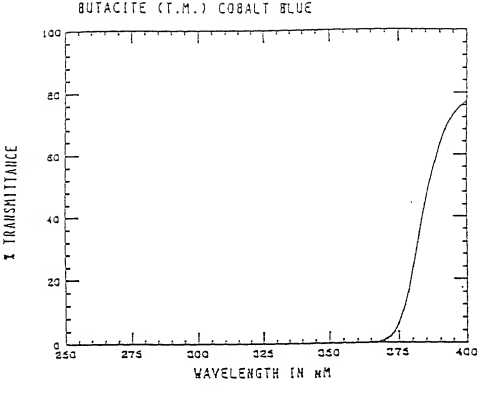

FIG. 28A

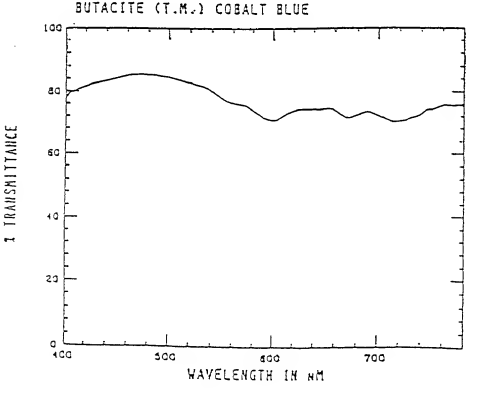

FIG. 28B

WO 00/07822 PCT/US99/17660

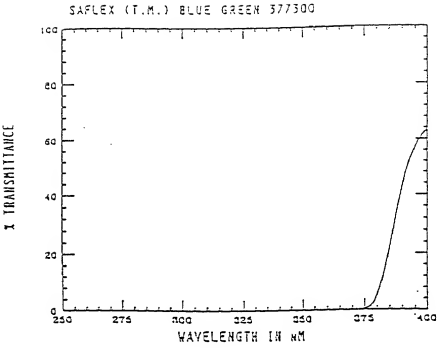

FIG. 29A

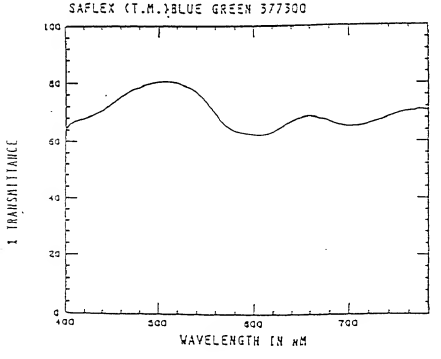

FIG. 29B

T06001-022760

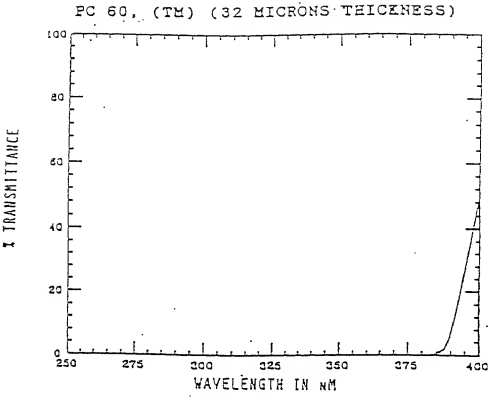

FIG. 30

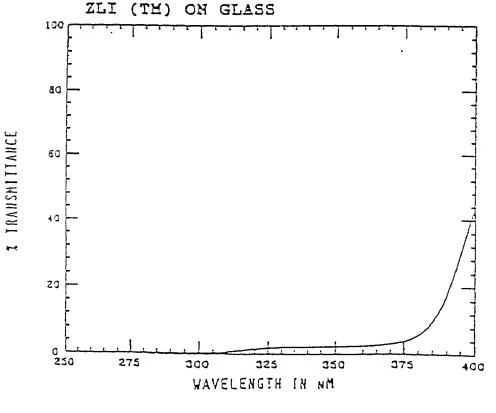

FIG. 31

T06007.022.2600

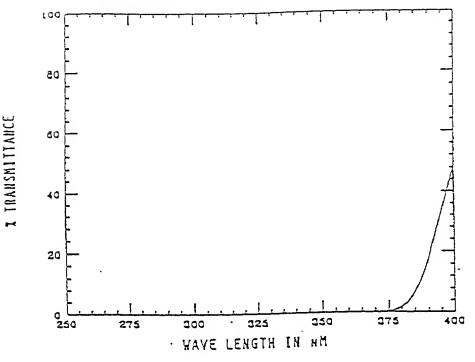

FIG. 32

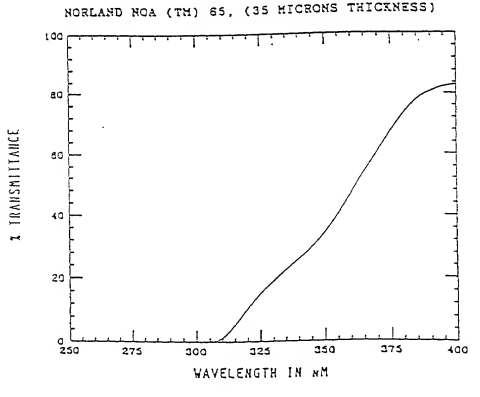

FIG. 33

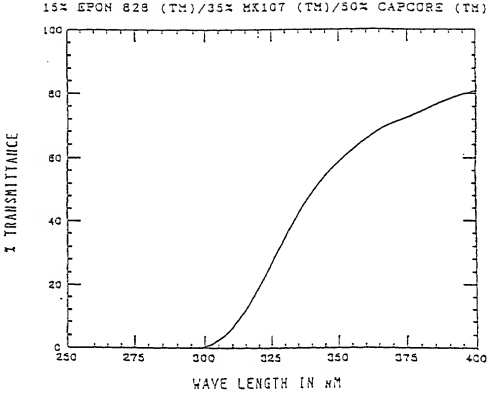
15% EPON 828 (TM)/35% MK107 (TM)/50% CAPCURE (TM) 3-800
% TRANSMITTANCE
100
80
60
40
20
0
250
275
300
325
350
375
400
WAVE LENGTH IN nM

FIG.34

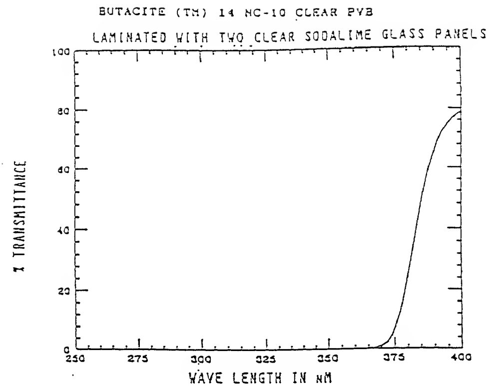

FIG. 35A

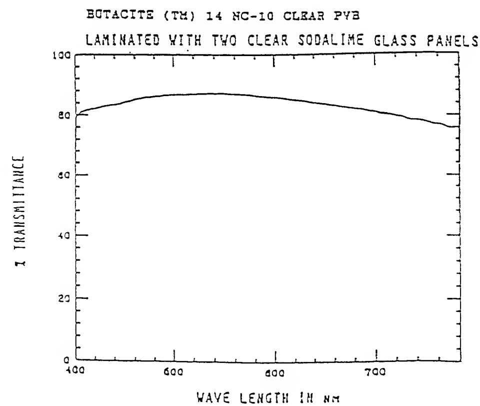

FIG. 35B

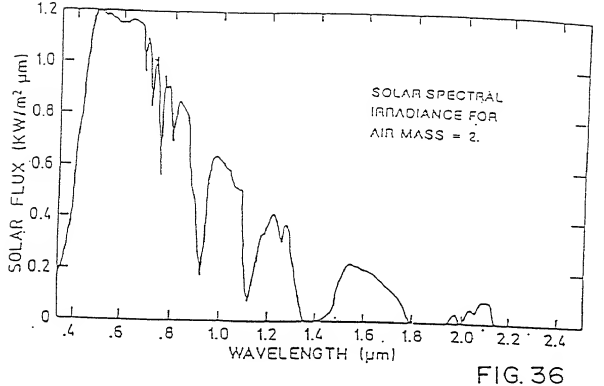

FIG. 36

SILVER ON GLASS

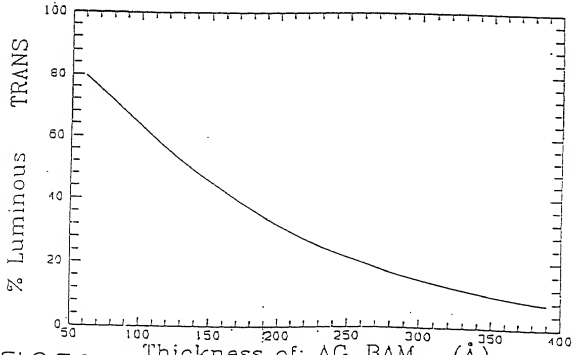

FIG. 36A

10600T "02E2660

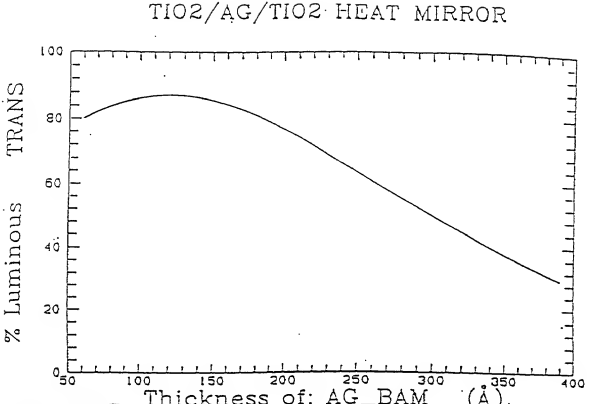

FIG. 36B

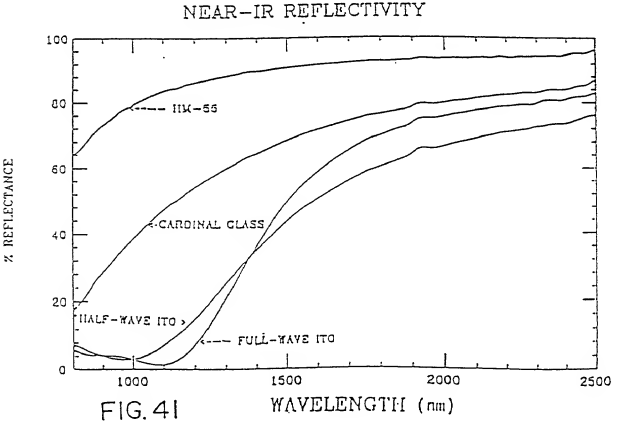

FIG. 41

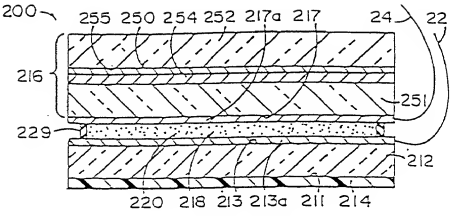

FIG. 37

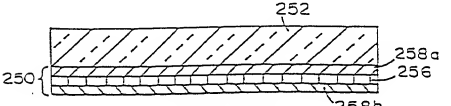

FIG. 38

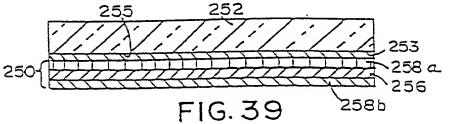

FIG. 39

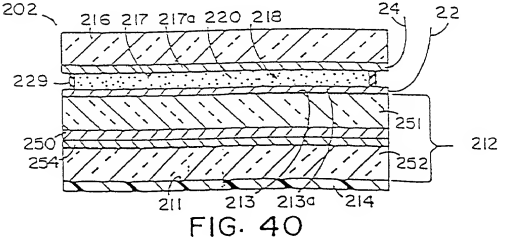

FIG. 40

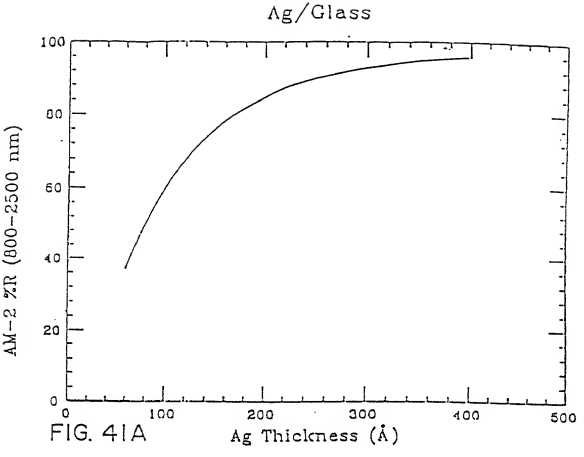

FIG. 41A

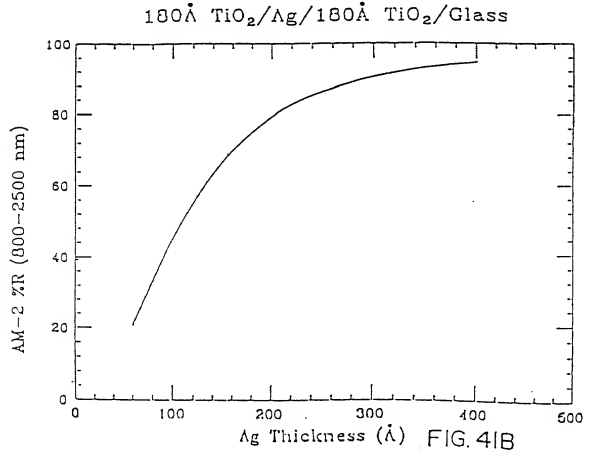

FIG. 41B

TO6007 "DEE4660

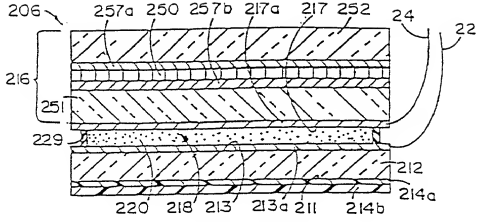

FIG. 42

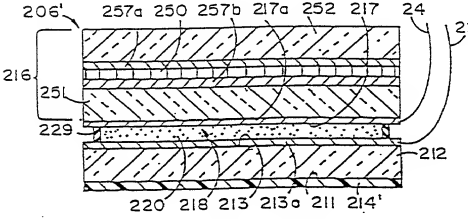

FIG. 42A

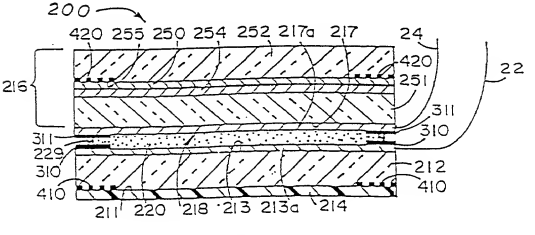

FIG. 43

09973320 - 100901